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ABOUT

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Established in 1988 as an essential forum for real estate investment thought leadership, AFIRE provides a forum for its senior executive, institutional investor, investment manager, and service provider members to help each other become Better Investors, Better Leaders, and Better Global Citizens through conversations, research, and analysis of real estate capital markets, cross-border issues, policy, economics, technology, and management. AFIRE has nearly 180 member organizations from 25 countries representing approximately US$3 trillion in assets under management.

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About the cover: A pedestrian bridge crossing an interstate highway, connecting pedestrians to a public transit system in Chicago. Summer 2023.
Photo by Benjamin van Loon.

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SPECIAL SECTION: FOCUS ON CLIMATE CHANGE

By the time this issue of Summit Journal is published, weather data for the summer of 2023 will likely show that the earth has reached its hottest average temperatures in more than 120,000 years.

Benjamin van Loon
AFIRE

NOTE FROM THE EDITOR

WELCOME TO #13

Anyone who steps into the elevator of an average US high-rise building will notice a curious absence: the thirteenth floor.

Ever since vertical transportation revolutionized building design and innovation in the early twentieth century, the entire real estate, construction, and architecture industry has been nettled by the persistent but often unconscious fear of the number 13, also known as *triskaidekaphobia*.

For example, a study from Otis Elevators, a US-based vertical transportation company, estimates that 85% of its elevators don't include thirteenth-floor buttons.[1] This superstition plays out in real estate values, as well. According to a study from Realting.com, thirteenth floor apartments are typically bought 18% less often than those on other floors.[2]

While the historical roots of triskaidekaphobia are murky, data suggest that this fear is largely cultural. Many civilizations, both past and present, actually see the number as fortuitous.

In the case of this new issue of Summit Journal (#13), we're splitting the difference.

That's because this issue appears at a transitional time in our industry—and, more broadly, a period of deep change across cultures, economies, and environments. This change isn't inherently positive or negative; it's something that simply *happens*. And how we respond—as investors, leaders, and global citizens—is ultimately what determines the quality of the change we're confronting.

It's therefore not a surprise that, for this issue, we've had several authors considering the same sorts of questions and trends—notably, *re* climate change (p. 22) and America's evolving demography (p. 72)—all arrived at independently; unprompted from our own editorial calls for articles and ideas. As global investors and asset managers, we're all ultimately facing the same questions, confronting the same conscious and unconscious fears, and working collectively to find answers to the universal challenges presented by epochal change.

The voice of our editorial board for this issue (which you'll find as peer review comments at the end of several articles) offers both amplification and correction of several of these ideas, underscoring what it means, in practice (and as an extension of AFIRE's key mission, to help each other become better investors, leaders, and global citizens), to split the difference between fate and fortuity.

Welcome to thirteen.

Benjamin van Loon
Editor-in-Chief, Summit Journal
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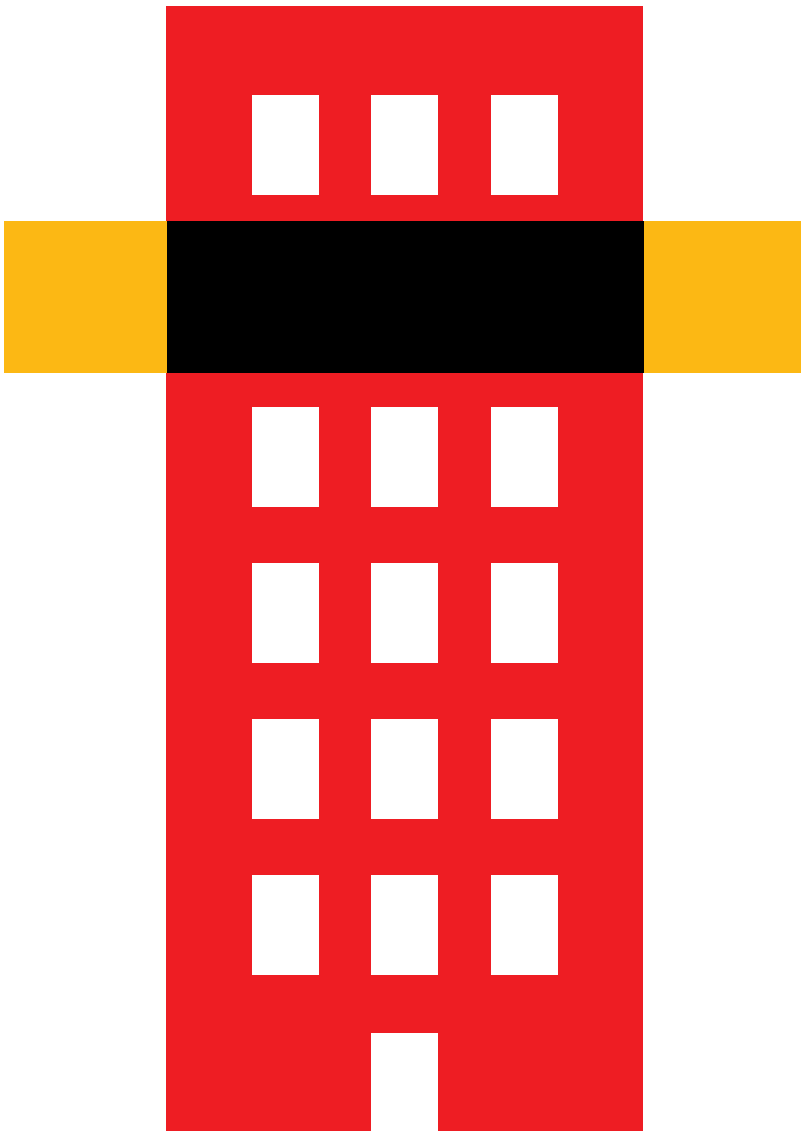
[1] Diana Ionescu, "Missing 13th Floor: How Ancient Fears Influence Modern Architecture." Planetizen. Accessed 29 August 2023. https://www.planetizen.com/blogs/120954-missing-13th-floor-how-ancient-fears-influence-modern-architecture

[2] "The Power of Superstitions: How Number 13 Deters Apartment Buyers." Realting. Accessed 29 August 2023. https://realting.com/news/the-power-of-superstitions-how-number-13-deters-apartment-bu.



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The "great sag" in the US office market—and potential underlying financial fragilities—do not necessarily portend the calamity popularly forecasted by today's market skeptics.

The confluence of several dynamics—some of which predated the pandemic, some of which have been exacerbated during pandemic, and some of which have emanated from recent banking wobbles—have led some market participants to portend a coming "armageddon" in the office segment of commercial real estate.[1]

In the US, the secular shifts to remote and hybrid working jolted the real estate industry, as many leading investors and developers wondered whether demand would ever recover for office space (and also for office anchored retail). Looking to the supply side, the US market is particularly beleaguered by a glut in Class B office stock—that is, ossified office buildings, many of which were constructed in the aesthetically-lean 1970s. Given the datedness of these edifices, much of US Class B office stock has been historically starved of capital, and is thus largely ill-equipped to cater toward changing patterns of demand for ESG and technology-driven working spaces.

On the financial side, recent bank wobbles have laid bare the exposure of some small lenders to CRE assets and debt—particularly those in the office and office retail landscape. An interest rate rise environment and concerns about the trajectory of economic growth—combined with the impacts of the structural shifts to teleworking—had already brought lending to a standstill in Q4 2022. Thus, even prior to the bank collapses in March 2023, lenders were largely unwilling to deploy capital to a sector undergoing secular shockwaves, and potentially for overvalued assets.

Indeed, asset price inflation which predated the pandemic has continued—and is even applicable to afflicted sectors such as office buildings. Amidst an elevated price backdrop, we are currently operating in a frozen market in the US (unlike in Europe, as we explore below), with a lot of room for price discovery between buyers and sellers. As larger US lenders reduce their exposure to CRE and signal potential losses on the horizon,[2] any meaningful dip in prices—combined with a cascade of delinquencies—could trigger an overt loss of confidence in the US CRE market. Hence, looking beyond the bank wobbles—which appear to be contained—the proverbial "other shoe" might well drop.

THE OPPORTUNITY: RETHINK AND REIMAGINE

Nevertheless, as these two authors maintain, the "great sag"—and potential underlying financial fragility—with US office stock does not necessarily portend the calamity that others have forecasted. In terms of the market outlook, although we are likely to witness geography and asset-specific pockets of distress, this does not appear to spell a reprise of the "all boats overboard" moments of 2008 and the GFC.[3] And, at the asset level, the fact that the American office market is a laggard vis-a-vis European peers actually presents an opportunity for equity-heavy investors—especially those well-poised in the prop tech space, to equip properties for climate resilience via savvy digital adoption.

The smartest capital is likely to be deployed to the most vibrant central business districts (CBDs)—the deployment of which creates a distinct opportunity for the next cycle.

Rethinking and reimagining our business communities is not the sole preserve of real estate developers; forward-thinking municipal authorities, as well as infrastructure investors, will have a significant role to play. As we equip our cities and buildings for climate resilience and for new ways of working, prop tech investors will also be presented with significant opportunities for scaling their investments—in an age of secular shocks, this might be termed ad-venture capital! Lastly, as we conclude, reimagining our professional urban environments will require improvements in public safety—a critical and decisive factor in determining the attraction of specific markets for durable investment over a long horizon.

THE FINANCIAL PICTURE: US CRE AND POTENTIAL POCKETS OF INSTABILITY

Since the start of the COVID-19 pandemic and the rapid adoption of remote working by many tenants of CBD office space, many of the world's most prominent investors have voiced their concerns about steep losses in the office sector. In spring 2020, our forecast was that many white collar services jobs would converge toward a three-day office work week, which might result in about a 10% decline in footprint—and hence a meaningful drop in prices. Over three years later—and amidst a widespread adoption of hybrid working for many CBD office tenants—we've not yet witnessed a significant plunge in asset prices in the US market, where prices remain elevated.[4]

By contrast, looking across the Atlantic, transaction volumes in the European CRE market have held relatively steady throughout the pandemic economy years,[5] and some investors have already taken their mark to market losses. Unlike in the US, assets are still trading, and notwithstanding potential pockets of overvaluation in some key cities, the office building stock is arguably markedly better in European markets, as many structures were built to stand the test of time.

The onset of the recent bank wobbles in the US—reverberating through portfolios in recent months—have cast a shadow of doubt of whether such a moratorium on price discovery can continue, at best—or indeed whether the US CRE market might be the locus of the next wave of financial distress. Many have pointed to the linkages between the smaller banks in the US and the CRE landscape. As we can see in *Exhibit 1*, the country's smaller lenders have deep exposure to office and office-adjacent retail, in contrast with America's larger banks, where such assets make up a more modest component of total portfolios.

Our base case is that the wave of consolidation amongst the smaller banks in the US remains contained. However, some of these lenders have already commenced offloading loans at a loss, signaling the potential for writedowns and hence a softening of prices across the office landscape.[6]

Also, in contrast with the European market, a potentially worrisome development—and a feature of the unique hyper-financialization of the US market—is that of securitization and US CRE.[7] Although CMBS's are not as dominant in the pre-GFC heyday, non-agency holders of CMBS still comprise 15% of outstanding CRE loans to office and office-anchored retail in the US, and hold about half a trillion dollars' worth of assets in the space.[8] These are not insignificant numbers. The problem with securitization is that it implies liquidity—and in the event of defaults or delinquencies as some office-related loans reach maturity—the CMBS market is prey to redemption risk,[9] and hence may spur bouts of financial instability. Although ripple effects in the market may not become a torrent or a cascade—or a proverbial bubble bursting—a loss of confidence—precipitated by softening prices, or a rush to the exit of office-related CMBS—may be enough to create distress (and hence opportunities for alternative forms of credit, thus prolonging the trend of financialization!).

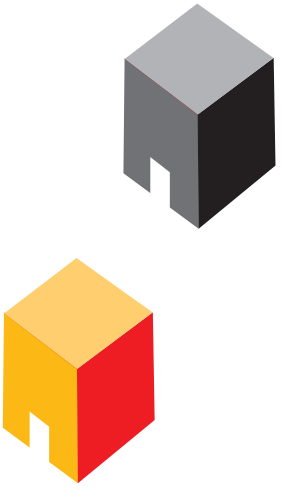
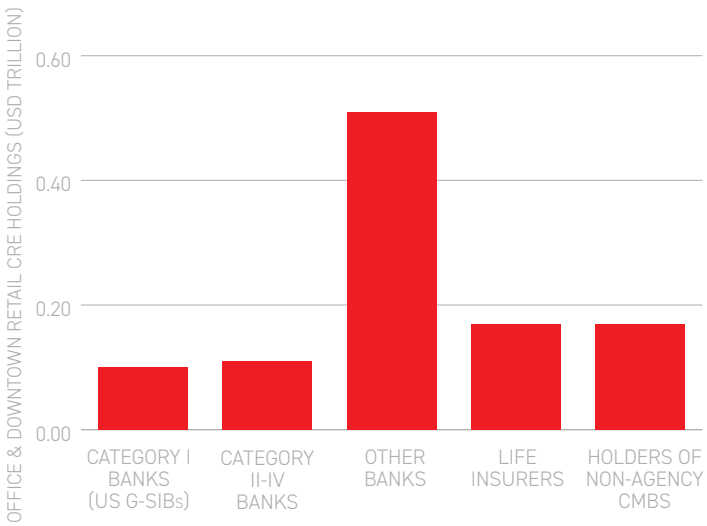


EXHIBIT 1: OFFICE AND DOWNTOWN RETAIL CRE HOLDINGS, US MARKET (Q4 2022) (USD)

Source: US Federal Reserve



THE ASSET PRICE LANDSCAPE: MARKET TO MARKET LOSSES?

The potential for such distress to emerge in the US CRE landscape is likely to differ from market to market, with the potential for sharp divisions even within specific markets. For example, much Sturm und Drang has been made about the fate of office space in downtown Los Angeles (DTLA),[10] but Century City remains a "shining star" as professional and legal services firms flock to the submarket's Class A buildings.[11] As we can see in *Exhibit 2*, vacancy rates remain high in tech-heavy CBDs, including San Francisco and Austin. Vacancy rates are also elevated in cities which continue to confront public safety issues, such as Chicago.

However, on the valuation front, asset prices remain significantly elevated—even in some of the hardest-hit CBDs, such as San Francisco. Office buildings in the Golden Gate city still command some of the highest prices in the US, usually standing neck and neck with Manhattan *(Exhibit 3)*.

The spread between prices and vacancy rates in secularly hard-hit CBDs such as San Francisco means that the other shoe may eventually drop. The trigger might be a wave of defaults on one CBD, which might then have a domino effect on markets which are overpriced, over-crimed, and under-leased.

EXHIBIT 2: OFFICE VACANCY RATES, US METRO AREAS (APRIL 2023)

Source: Commercial Edge National Office Report 2023

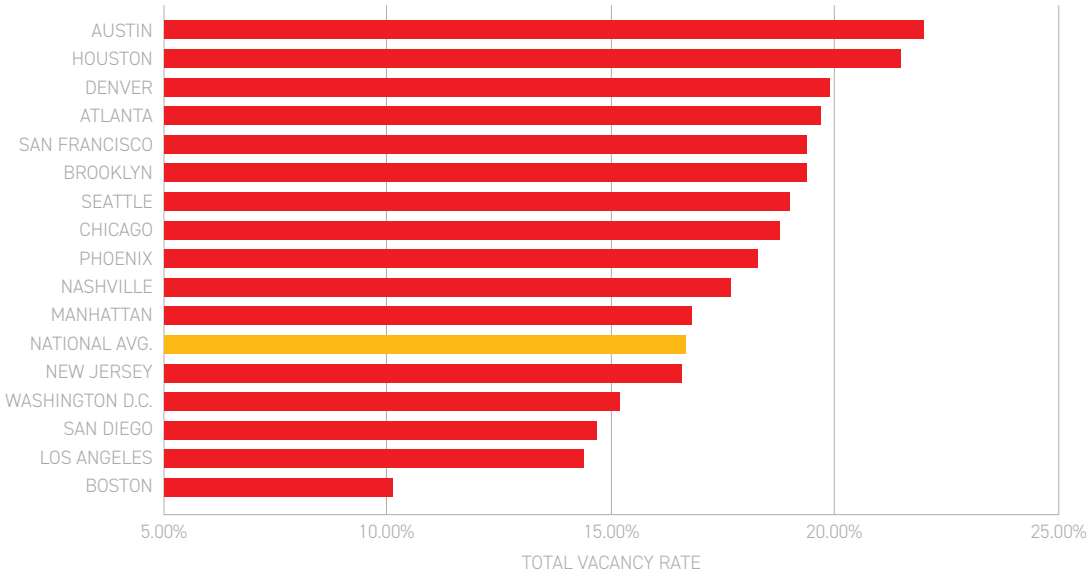
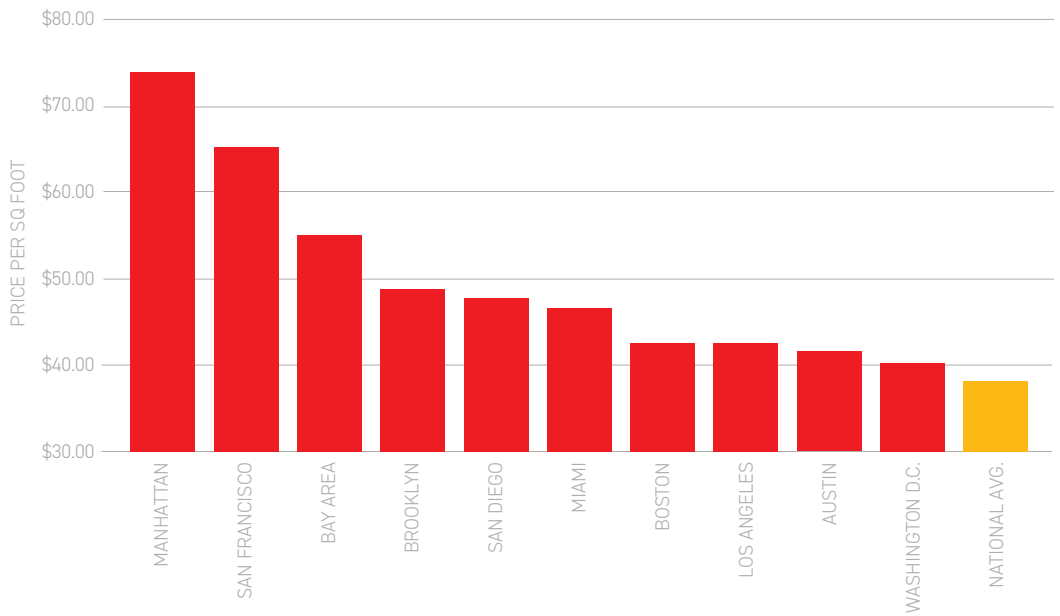


EXHIBIT 3: OFFICE SPACE PRICE PER SQ. FOOT, US METRO AREAS (APRIL 2023)

Source: Commercial Edge National Office Report 2023



AT THE ASSET LEVEL: FLIGHT TO QUALITY

As indicated above, America has a Class B problem related to its existing office stock. A refusal to acknowledge obsolescence predated the COVID-19 pandemic—has continued, even during the secular shocks from WFH, amidst an elevated price environment, and a frozen trading landscape.

Although some optimists have pointed to the potential for such ossified office buildings to be turned into residential units (thus also alleviating the issue of a chronic shortage of affordable housing in the US), the top affordable housing developers have cited the structural challenges of such conversions. What this means is that a significant portion of US Class B office buildings will be rendered obsolete: for these reasons, one prominent executive points to pockets of purgatory in the US office landscape, and estimates that as much of 20% of the market will "have the keys handed in."[12]

By contrast, European office stock seems to be standing the test of time, as it increasingly caters toward investor preferences for environmental protocols and the 'E' in ESG. This might be a function of the assets themselves (as buildings were constructed for *la longue durée*); the lending profile to these assets (given the fact European banks bear the lion's share of exposure to commercial real estate assets,[13] their portfolios are subject to mounting climate regulations and stress testing); investor preferences (such as mandates from pension funds); or a combination of the three.

Thus, European office stock is arguably better positioned to weather the climate storm—emanating from regulation and/or investor preferences—which stands in contrast with the overhang of class B office stock.

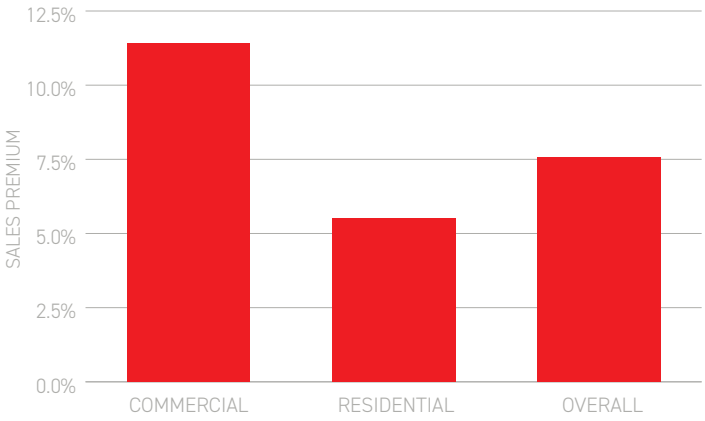
In fact, as we can see in *Exhibit 4*, an examination of sales data from markets across the globe (including the US) reveals that investors in commercial real estate are willing to pay a "green premium" for high quality assets which can fulfill certain environmental qualifications.

This suggests that an immense opportunity might unfold to rethink, reimagine, and potentially to future-proof America's office stock for enhanced climate resilience, and to cater toward shifting winds of investor preferences.

European office stock seems to be standing the test of time, as it increasingly caters toward investor preferences for environmental protocols and the 'E' in ESG.

EXHIBIT 4: GREEN CERTIFICATION SALES PREMIUM BY PROPERTY TYPE (%) (2022)[14]

Source: European Systemic Risk Board



DEMAND SHOCKS

In sum, in considering the demand shocks rendered to the US CRE market by the pandemic-induced shifts to telework, the verdict is still out on just how much space will be required by tenants in America's CBDs.

As some prominent companies increase their requirements for return-to-office, others are actually increasing childcare offered on-site—with the belief that the ability for working parents to come to the office has a positive impact on productivity and well-being.[15] Indeed, a close reading of data on productivity levels during the pandemic economy years evidences that the gains experienced in the early waves of COVID-19—when many white collar workers could work from home and thus save on commuting time—actually erodes over time, in part due to a lack of in-person collaboration.[16]

People need offices—in order to bind together as a professional and organizational culture—and need spaces to convene for whiteboarding, brainstorming, mentoring, and apprenticeship, as well as product education and socialization. Recognizing this need, and the continuing relationship between office space, professional culture, and productivity, we are hopeful that America's current Class B problem—and pockets of potential financial instability—will actually open up an opportunity for the convergence between thoughtful city planning, cooperation between public, private and philanthropic interests, evidence of which we have witnessed in thriving urban centers including Dallas,[17] Nashville, Salt Lake City, and Indianapolis.

Lastly, any bouts of financial distress—or severe losses in the office and office-anchored retail space—set against the backdrop of a higher rate environment—might just yield the advent of opportunistic funds, and alternative forms of credit, to step in where the markets have retracted.[18] This might be termed ad-venture capital, for those courageous enough to take advantage of a potential reversal in the market—for future cycles in the built environment.

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Dr Alexis Crow is Head of Geopolitical Investing and Byron Carlock is US Real Estate Practice Leader for PwC US.

NOTES

[1] For soothsaying from one of the world's most prominent investors, see https://www.ft.com/content/da9f8230-2eb1-49c5-b63a-f1507936d01b

[2] https://www.ft.com/content/3e905e3c-697c-4109-bd9a-605e75a0cfa4

[3] In part due to regulation implemented in the wake of the last crisis, the US GSIBs are in much better standing, and CRE holders and lenders have healthier LTV ratios.

[4] The US Federal Reserve continues to point to elevated prices across the RE landscape in the US, including office and office-anchored retail. See, for example, https://www.federalreserve.gov/publications/files/financial-stability-report-20230508.pdf

[5] See chart 2, page 11. https://www.esrb.europa.eu/pub/pdf/reports/esrb.report.vulnerabilitiesEEAcommercialrealestatesector202301~e028a13cd9.en.pdf

[6] https://www.ft.com/content/3e905e3c-697c-4109-bd9a-605e75a0cfa4 ; See also: https://www.reuters.com/business/finance/overexposed-us-regional-banks-could-sell-commercial-property-loans-2023-05-17/

[7] It should be noted that although CMBS is not a feature of the European office debt landscape, the potential for liquidity mismatches in open-ended CRE funds does raise concerns for financial stability. See: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report.vulnerabilitiesEEAcommercialrealestatesector202301~e028a13cd9.en.pdf Pg. 34.

[8] https://www.federalreserve.gov/publications/files/financial-stability-report-20230508.pdf

[9] https://www.bloomberg.com/news/articles/2023-06-08/delinquent-office-loans-at-five-year-high-trouble-cmbs-market

[10] See, for example, https://www.wsj.com/articles/brookfields-los-angeles-office-company-is-roiled-by-defaults-37ac5751?mod=Searchresults_pos6&page=1 ; https://www.ft.com/content/ecb9201a-b0ed-4ea2-9268-188705abb7ea#post-bd74773d-e5e0-484d-8cdd-07d109fa1b73

[11] https://labusinessjournal.com/real-estate/the-real-estate-quarterly-difficulty-leasing/

[12] https://www.bloomberg.com/news/articles/2023-06-07/pgim-ceo-sees-60-of-office-real-estate-market-in-purgatory

[13] In terms of lending as well as asset exposure. See, for example, chart 4, https://www.esrb.europa.eu/pub/pdf/reports/esrb.report.vulnerabilitiesEEAcommercialrealestatesector202301~e028a13cd9.en.pdf

[14] Original meta-analysis examines sales in the US, UK, Japan, Sweden, Australia, Singapore, Spain, Canada, China, France, Germany, Hong Kong, Netherlands, and Switzerland by Dalton and Fuerst (2018)

[15] See, for example, https://www.wsj.com/articles/more-companies-start-to-offer-daycare-at-work-95d267bb

[16] Gordon and Sayed, "A New Interpretation of Productivity Growth Dynamics in the Pre-Pandemic and Pandemic Era U.S. Economy, 1950-2022"

[17] For one imaginative conversion of Class B office, see One Main Place in Dallas: https://www.dallasnews.com/business/real-estate/2015/01/13/downtown-dallas-one-main-place-tower-will-house-new-westin-hotel/

[18] See, for example, https://www.bloomberg.com/news/articles/2023-05-01/apollo-s-rowan-says-next-stress-wave-is-commercial-real-estate ; https://www.bloomberg.com/news/articles/2023-01-23/europe-is-bracing-for-a-sharp-and-abrupt-real-estate-reversal

REVIEWER RESPONSE

More than three years after the pandemic upended our collective relationship to the built environment, the debate over the future of the office sector continues unabated. As vacancy rates have climbed and many sources of financing have retrenched, popular assessments of the office outlook have turned increasingly grim. Well-worded estimates of value declines are assured their readership, but often with little attention to the reasonableness of their underlying assumptions or thought to solutions. Similarly, a recent spate of highly visible investments in Manhattan and other legacy markets have been styled in contrarian terms, ignoring the bifurcation of competitive and uncompetitive assets.

In this careworn environment, Crow and Carlock offer welcome perspective, summarizing the facts on the ground but also turning the focus to how investors and operators can navigate the reality of offices' changed position in our economy's post-pandemic production function. Among their most salient arguments, successfully rethinking offices will require alignment across a broad range of stakeholders than just real estate. Apart from property owners and developers, local governments must adopt bolder, more creative, and more flexible approaches to the design of the built environment and policies—in areas ranging from taxes to infrastructure—that have the potential to undermine or enhance the strength of urban agglomeration.

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THE UNDERPERFORMANCE PARADOX

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We show that despite acquiring multifamily properties at seemingly less attractive prices, corporate investors consistently outperform individual investors, which implies that proactive asset management including data driven approaches and real estate technology creates a competitive advantage.

Why do individual investors seem to fall behind, despite having greater agility and fewer dependencies than institutionalized investors?

Intuitively, individual investors have less information advantages and fewer economies of scale than corporate investment firms. The scale and specialization of large firms allow for the spreading out of data and research costs over many transactions (amortization), provide a platform for testing strategies to enhance value, and enable the use of incentivized compensation to align interests. However, these firms may be constrained by the requirement to maintain a specific investment focus or "stay in their lane." This could result in a narrower range of outcomes and, theoretically, limit the potential for high returns.

Individual investors, while arguably lacking the institutional structure and processes of professional investment companies, may see higher upside due to the absence of investment restrictions and their alignment of incentives (i.e., they keep all profits). Conversely, they might be exposed to greater risks due to the lack of investment constraints. Thus, a higher variance in returns would be expected, with more outliers on both sides of the return spectrum.

These differences form part of the conventional wisdom within real estate investing. However, a historical shortage of data (and data analysis) in the sector allowed such mental models to continue unconstrained by the burden of proof. With a recent positive shift in data availability and scientific rigor, we can fact check these statements and expose them to sunlight, the results of which can inform a more robust investment process for individuals and firms alike.

In the interest of informing this process, this article provides an analysis of 22 years of multifamily transaction records (and an apples-to-apples transaction comparison), suggesting that individual investors materially underperform corporate investors. As we will show, the underperformance cannot be attributed to geography, property vintage, hold period, market timing, property size, or pricing (per square foot)—because all of these variables have been controlled for. Finally, we delve into the possible causes of this underperformance by individual investors and explore the implications of these findings.

METHODOLOGY

Our goal in this analysis is to generate a statistically significant volume of comparable transactions: each individual investor transaction paired with one corporate investor transaction. We control for various factors that may influence investment returns (e.g., property vintage, market timing, transaction year, price per square foot, portfolio transactions, location, and household income) so we attempt to arrive at a true apples-to-apples comparison.

A transactor is classified as an "individual" if the name in the grantor/grantee fields of a transaction record is that of a person or a company registered at a residential address. A transactor is considered "corporate" if it is a company registered at an address of a commercial property (an office or another commercial building). Our research shows that about 20% of all multifamily properties in the US are owned by individuals.

ACQUISITION PRICE EXPERIMENT

Our first question was: do individual and corporate investors acquire multifamily properties at the same price per square foot?

To answer this question, we constructed a parallel dataset of multifamily purchases made by individuals and by corporations (while controlling for key variables), and analyzed the difference in purchasing prices between the two groups. We ensured a robust and fair comparison by checking for potential selection biases.

We started with a dataset of all acquisition transactions on multifamily properties performed nationwide. We excluded small transactions (those with a price of less than $1 million) and removed transactions in non-disclosure states.[1] We also removed transactions with price tags differing significantly (5x or more) from the property's market value; those that differ might be non-market transactions which we do not want to consider. We then removed all bundle transactions that we managed to detect. We ended up with 42,300 transactions.

From these 42,300 acquisition transactions, we selected only those with populated (and sensible) values of the property size (at least 10,000 square feet), year built (which should be prior to the year of the transaction), and county where the property is located. For each census tract where the transacted property was located, we extracted the median household income value from the National Historical Geographic Information System (NHGIS) and associated the income value with the transaction. We split the resulting transactions to the 3,366 performed by individuals and 13,318 performed by corporations.

For each transaction made by an individual, we looked for a similar transaction made by a corporation, while controlling for:

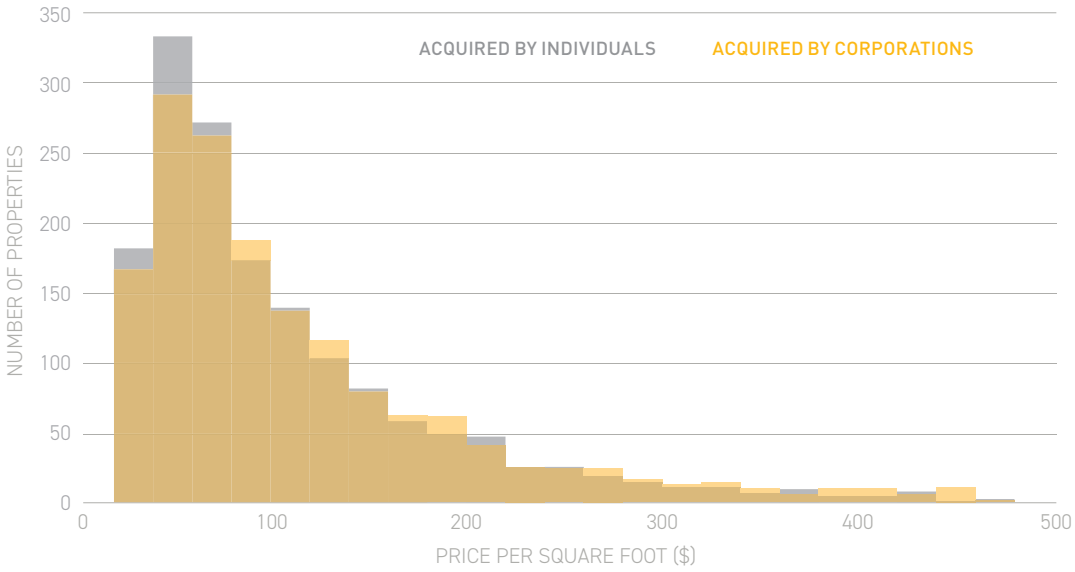
1. Acquisition year (the two transactions should be made in the same year, or at a one-year difference from each other);
2. Location (the two transacted properties should be located in the same county);
3. Year built (the two properties are built within 10 years from each other);
4. Property size (up to two times larger or smaller from each other);
5. Household income level in the neighborhood (up to two times greater or lesser from each other);
6. Sensible price per square foot (prices per square foot for both properties should be in the range between $10 and $1000, to exclude overly cheap properties, extra luxury properties, and unreasonable cases or data issues).

Once we applied this matching mechanism, we discovered that, on average, corporate acquisitions involved larger properties than those acquired by individuals. To accommodate for that, we randomly excluded some cases when the matching corporate acquisition was larger than the individual acquisition.

We ended up with 1,635 acquisitions made by individuals and 1,635 matching acquisitions made by corporations. We then compared prices per square foot in both datasets *(Exhibit 1)*.

EXHIBIT 1: PRICE PER SQUARE FOOT FOR INDIVIDUAL AND CORPORATE INVESTORS

Source: Authors



We found out that, on average, individuals acquired multifamily properties at $118 per square foot (with standard error of the mean of $2.8), while corporations acquired properties at $128.4 per square foot (with standard error of the mean of $3.1). Median prices are $80.6 and $87.0 respectively. This implies that individuals tend to acquire cheaper properties, as compared to corporations.

We checked for possible selection biases and found none, noting that:

1. Both individual and corporate acquisitions involved properties that were built around the same time (with an average year of 1979 and a median year of 1976, for both individual and corporate acquisitions).

2. Both individual and corporate acquisitions are done over properties of roughly the same size. For individuals, the average size is 77,000 square feet, with the standard error of the mean of 2,000 square feet, and the median of 45,500 square feet. For corporations, the average size is 76,500 square feet, with the standard error of the mean of 2,000 square feet, and the median of 47,000 square feet.

3. Both individuals and corporations made acquisitions in neighborhoods with similar household income (between $64,000 and $65,000 on average, with the standard error of the mean of $600, and between $60,000 and $61,000 as the median).

4. In terms of location, the US state distribution of acquisitions made by individuals correlates well (r=0.76) with the overall US state distribution of multifamily properties (excluding non-disclosure states). By design, the US state distribution of acquisitions made by corporations is identical to that made by individuals (each property in one dataset is matched with a property of the same county in the other dataset).

REPEATED TRANSACTION EXPERIMENT

In the second experiment, our focus shifted to repeated transactions. Specifically, we analyzed properties that were both acquired and subsequently sold by individual and corporate investors.

We recorded acquisition and sale prices for both transactions and asked the question of whether investment returns of individuals are different from the investment returns of corporations. As previously, for each acquisition/sale pair of transactions done by an individual, we match an acquisition/sale pair of transactions done by a corporation.

We started with the same dataset of 3,366 transactions performed by individuals and 13,318 performed by corporations. The design of this experiment was almost identical to the design of the previous experiment, with an adjustment to the first control:.

acquisition year (the two properties should be acquired within 10 years from each other) and sale year (the two sale transactions should be made in the same year, or at a one-year difference from each other).

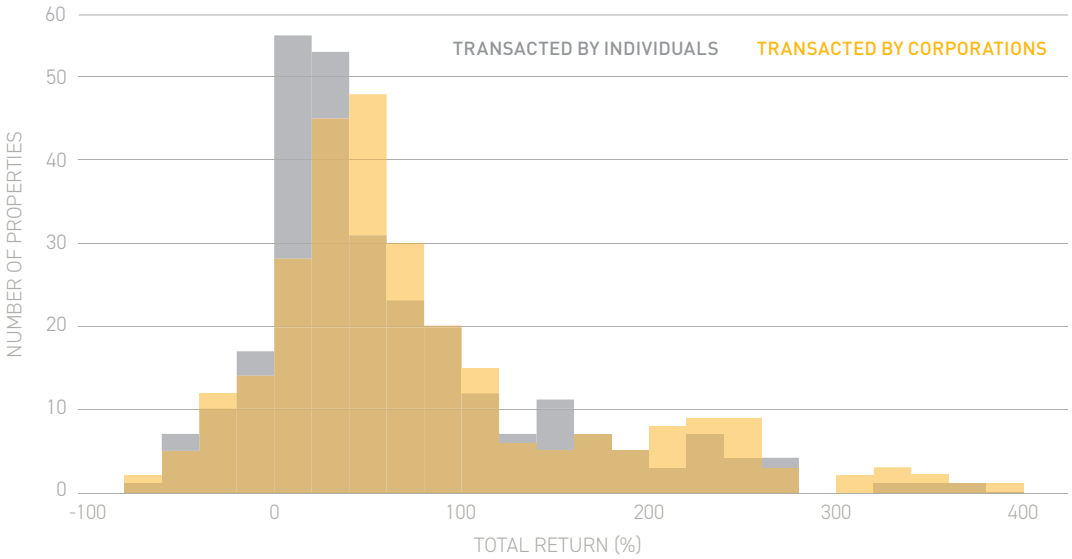
We discounted larger properties on the corporate side exactly in the same way as in the previous experiment.

We ended up with 280 acquisition/sale pairs of transactions made by individuals and 280 matching pairs of transactions made by corporations. We then compared appreciation returns in both datasets (the sale price minus the acquisition price, divided by the acquisition price and multiplied by 100, to come up with percentages).

On Average, individual investors had appreciation returns of 62.6%, while corporate investors had appreciation returns of 79.1%.

EXHIBIT 2: APPRECIATION RETURNS OF TRANSACTIONS MADE BY INDIVIDUAL AND CORPORATE INVESTORS

Source: Authors

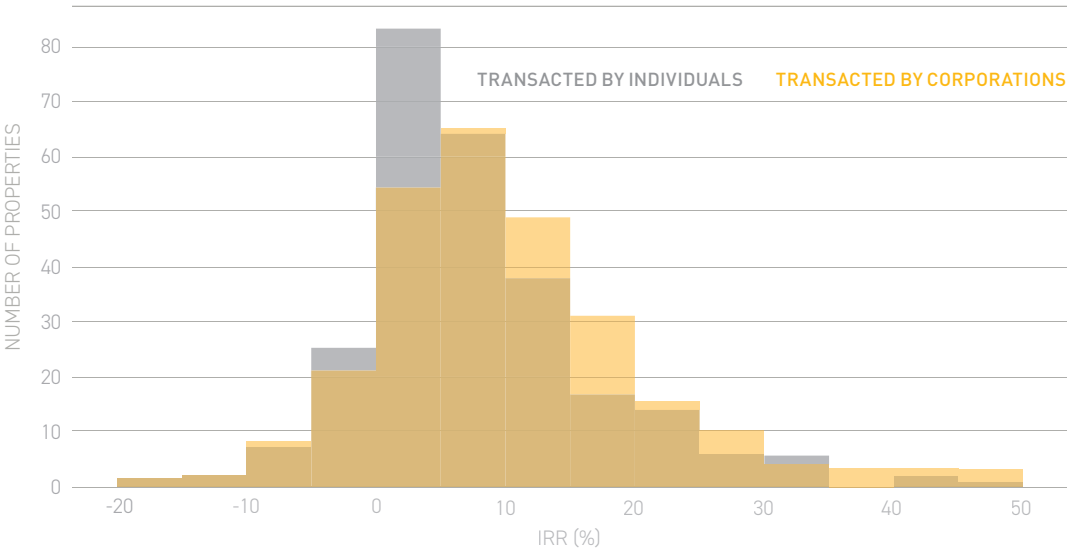


As shown in *Exhibit 2*, on average, individual investors had appreciation returns of 62.6%, with a standard error of the mean of 4.6% and a median of 38.8%, while corporate investors had appreciation returns of 79.1%, with a standard error of the mean of 5.3% and a median of 52.9%. Our results indicate that individuals generally earn significantly lower appreciation returns than corporations.

We proceeded with recording IRRs and saw similar results:

EXHIBIT 3: IRRS FOR INDIVIDUAL AND CORPORATE INVESTORS

Source: Authors



The average IRR of individuals is 10.3% with the standard error of the mean of 1.1% and the median of 6.2%, while the average IRR of corporations is 12.8% with the standard error of the mean of 1.2% and the median of 8.5%. The IRR of individuals is significantly lower than the IRR of corporations.

We applied the same selection bias tests as in the first experiment, along with an additional test tailored specifically to this study:

1. Property year of built is the same for both cases (average of 1980, median of 1978);

2. Property sizes are similar (for properties transacted by individuals the average size is 91k sqft with the standard error of the mean of 5k sqft and the median of 55k sqft, while for properties transacted by corporations the average size is 92k sqft with the standard error of the mean of 5k sqft and the median of 53k sqft);

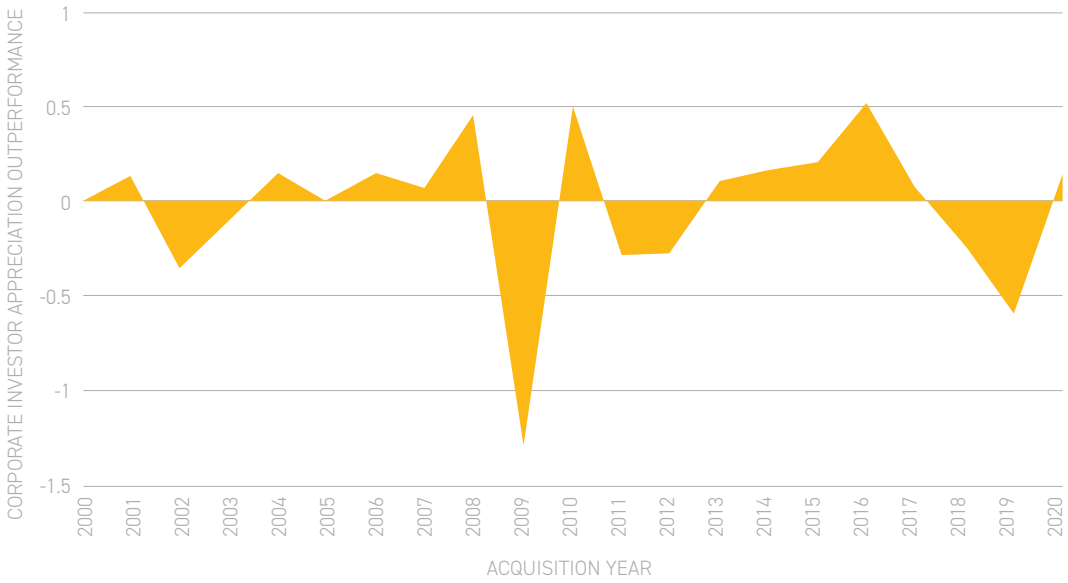
3. Household incomes in the neighborhoods are practically identical ($61.7k and $61.8k on average and the median of $57.3k and $57.5k, for properties transacted by individuals and corporations, respectively);

4. The distribution of transactions over the US States positively correlates with the distribution of multifamily properties over the US States (r=0.56). Although the correlation is lower than in the previous experiment (r=0.76), this can be explained by the fact that our dataset in the first experiment is almost 6 times larger than the dataset in this experiment;

5. (NEW) The number of years properties were held by individuals and corporations, from the year of acquisition till the year of sale. Both individuals and corporations held their investment properties for a similar number of years (for individuals, the average is 7.1 years with the standard error of the mean of 0.3 years, while for corporations the average is 6.7 years with the standard error of the mean of 0.3 years). The medians are identical – 6 years – for both cases.

EXHIBIT 4: COMPARISON OF CORPORATE AND INDIVIDUAL APPRECIATION RETURNS BY YEAR, 2000–2020

Source: Authors



MARKET TIMING ANALYSIS

Corporate investors demonstrate significantly higher appreciation returns, both an IRR and an absolute appreciation basis. These higher returns cannot be explained by the aforementioned controlled variables. However, transaction timing, while controlled, adds some interesting nuances to the analysis.

In *Exhibit 4*, the area above zero denotes the years in which corporate investors outperform individuals based on paired transactions. For instance, in 2006, properties acquired by corporate investors appreciated by 44% more compared to similar transactions made by individual investors. In other words, corporate investors experienced an average appreciation of 1.69 times, compared to 1.24 times for individuals.

The results indicate interesting observations regarding market timing. In 17 out of 22 years, corporate investors outperformed individual investors over similar properties. However, individual investors outperformed in five of those years—several of which corresponded to market troughs. These results could potentially illustrate the advantage individual investors may have due to their ability to reallocate capital unconstrainedly during periods of market distress or uncertainty. Overall, while individual investors demonstrated adeptness in timing their transactions, corporate investors appeared to leverage opportunistic asset management to achieve greater returns.

Overall, while individual investors demonstrated adeptness in timing their transactions, corporate investors appeared to leverage opportunistic asset management to achieve greater returns.

INDIVIDUAL VS. CORPORATE

The data highlights the significant outperformance of corporate investors when compared to individual investors. Such outperformance is material and consistent across time, and it cannot be attributed to any of the controlled factors.

Individual investors demonstrate, to the market (in part) and to themselves (in part), savvy timing, with acquisitions at lower prices per square foot and at periods of market dislocation. However, the end results do not correspond to the initial aggressive start.

Capital allocation professional can interpret these results in several ways and different questions emerge. What about the asset management fee load? Corporate investors typically charge an annual asset management fee and an incentive fee for returns above pre-defined hurdles. Our analysis does not account for these costs, which most likely drag down corporate returns. However, there is sufficient outperformance in corporate returns that further analysis is merited.

Additionally, our analysis only focuses on capital appreciation and doesn't take income returns into account. Saying that, income returns are likely to be comparable, because we are controlling for vintage year, which is likely a key determinant of cash flow generation ability by asset. It can be the case that individuals rely on cash flow to generate their returns, rather than allocating available capital to improvement projects. Such income returns would need to be significant to move the needle and compensate for the underperformance on a capital appreciation perspective.

From this study's insights, it is clear that multifamily investment firms may need to revisit their strategies. Institutional investors frequently outperform individual investors, underscoring the importance of structured operations, strategic planning, and skilled management. This is where the incorporation of data-driven approaches and real estate technology can create a competitive advantage. The authors of this study, having worked in a variety of multifamily investment, real estate data, and tech-intensive roles, have seen first-hand how innovative practices in market research, process optimization, and proptech utilization can lead to increased performance and value enhancement in such firms.[2]

ABOUT THE AUTHORS

Ron Bekkerman is a Strategic Advisor for Cherre, a leading real estate data platform. Donal Warde is an Entrepreneur in Residence at Tenney 110, a startup venture studio within American Family Insurance.

NOTES

[1] The current list of non-disclosure states is: Alaska, Idaho, Kansas, Louisiana, Mississippi, Missouri (some counties), Montana, New Mexico, North Dakota, Texas, Utah, and Wyoming.

[2] For further research, we propose the examination of diverse asset classes, incorporation of income return estimates, and geographic segmentation of returns (e.g., coastal versus sunbelt markets).

REVIEWER RESPONSE

Ron Bekkerman and Donal Warde have tapped a database of 42,300 US multifamily (apartment) transactions, recorded over a 22-year period, to compare the investment performance of individual investors with that of corporates. What they found – using a repeat sales approach in which the sale price of an assert was compared with what the initial cost -- was that corporate investors outperformed individuals, meaningfully, achieving total returns 26% greater than those of individuals.

These results occurred despite what the authors describe as the "greater agility and fewer dependencies" of individual investors versus institutions. And they run contrary to what the authors describe as conventional wisdom in real estate investing that individuals should outperform corporations due to the "absence of investment restrictions and their alignment of incentives (i.e., they keep all the profits).

Bekkerman and Warde's methodology allows for an apples-to-apples comparison between institutional and individual transactions. They control for factors likely to affect total returns, including property vintage, market timing, year of transaction, price per square foot, location, and trade area household income.

Given the wide period over which the transactions occurred, the authors were able to extract a pool of repeat transactions – allowing for comparison of the sales price with the initial acquisition price. These repeat sales allowed for the total return comparison mentioned above.

They reviewed market timing as a factor, noting that individual investors did better than corporates in periods of market distress. But that corporates achieved significantly higher appreciation than individuals, outperforming in 17 of 22 years.

Why? They answer may lie in differences in what the investment goals and operating approach of the two groups. Individual investors often operate assets for stability of income, keeping them full rather than tolerating some vacancy in return for growth in in-place rents. This difference alone could explain the divergence in appreciation returns.

– Mary Ludgin, PhD
Senior Managing Director, Global Head Investment Research, Heitman

Member, Summit Journal Editorial Board

SPECIAL SECTION: FOCUS ON CLIMATE CHANGE

Benjamin van Loon
Editor-in-Chief, Summit Journal
AFIRE

By the time this issue of Summit Journal is published, weather data for the summer of 2023 will likely show that the earth has reached its hottest average temperatures in more than 120,000 years. In July 2023 on its own, as reported by the Copernicus Climate Change Service, "the month started with the daily global mean surface air temperature record being broken on four days in a row, from 3-6 July." The first three weeks of July ranked as the warmest three-week period on record, temporarily exceeding the critical 1.5°C threshold above preindustrial level, a "red flag" warning set in the 2015 Paris Agreement.

While all continents were affected by the summer 2023 heatwaves, large swaths of the US were especially affected—including many areas of the Sun Belt that have otherwise served as havens for real estate development, tax savings, weather predictability, and highway nodules for the past several decades. For example, in July 2023, Phoenix, Arizona "saw a temperature of 110° or hotter every single day from June 30 to July 30"—a record-setting 31 days of extreme heat, inhospitable to human life.

And as the data show, this summer is also likely to be the coldest summer of the rest of our lives, which means that Sun Belt darlings will become increasingly exposed to the harsh (and increasingly uninsurable) realities of our changing climate.

So where do we go next?

This special section of Summit Journal ventures some informed answers to this question. Collectively, the authors agree that there is no longer a debate about the inevitability of climate change. It's here, it's our new reality, and the winners will be those who plan for the future best—and adapt accordingly.

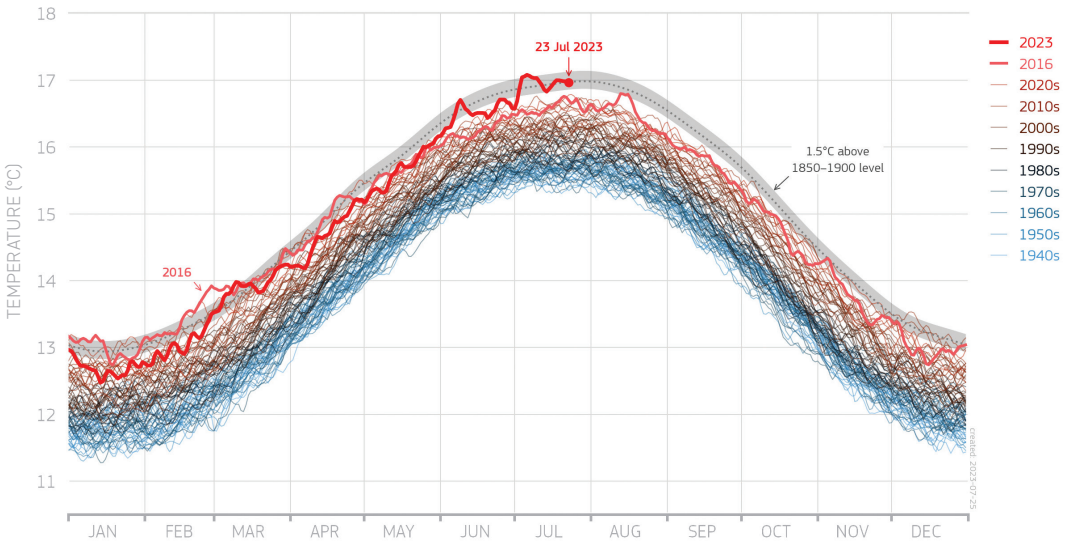
NOTES

[1] https://climate.copernicus.eu/july-2023-sees-multiple-global-temperature-records-broken

[2] https://www.abc15.com/weather/impact-earth/july-2023-sets-multiple-new-heat-records-across-arizona

EXHIBIT 1: DAILY GLOBAL SURFACE AIR TEMPERATURE

Source: ERA5; C3S/ECMWF



Note: Global daily surface air temperature (°C) from 1 January 1940 to 23 July 2023, plotted as time series for each year. 2023 and 2016 are shown with thick lines shaded in bright red and dark red, respectively. Other years are shown with thin lines and shaded according to the decade, from blue (1940s) to brick red (2020s). The dotted line and grey envelope represent the 1.5°C threshold above preindustrial level (1850–1900) and its uncertainty.

CLIMATE THREAT

Jacques Gordon, PhD
Executive-in-Residence
MIT

Translating rising climate risks into financial terms requires a cash flow model that anticipates changes in insurance, regulations, and asset hardening over the hold period and for the next buyer.

Atmospheric heat hit daily, weekly, and monthly records on three continents in 2023.[1] The top layer of all the major oceans also reached record high temperatures in 2023. Volatile weather has caused drought, floods, heat stress, wildfires, and wind damage at unprecedented rates across earth's human settlements in recent years. Higher temperatures also mean that the atmosphere can hold more water vapor, which creates more precipitation, even though drought conditions in isolated areas also increase due to the heat.

Climate-induced threats to human life and to property are rising and no clear end is in sight.

So, what should real estate investors do about climate change?

The top priority of the real estate industry has rightly been to focus on de-carbonization. This is a far-sighted and appropriate response, given that the energy used to operate and construct buildings accounts for two-fifths of global emissions, and in urban areas, this contribution spikes to over two-thirds of urban greenhouse gas (GHG) emissions.[2] Unfortunately, reducing carbon emissions is not likely to reverse the warming of the planet that has already occurred.

Even if the entire world manages to reduce harmful emissions over the coming decades, weather volatility will continue to persist, so long as C02 levels in the atmosphere are 60% higher than what they were in the pre-industrial era.[3]

In other words, there is no guarantee that GHG levels in the Earth's atmosphere will be reduced, despite all the "net zero" pledges that have been made by countries, municipalities, corporations, and asset owners.

The go-forward increases in GHG could moderate, but climate scientists are not sure how quickly CO2 parts per million would fall from current levels (in the 420 range[4]), given all the deforestation, desertification, and shrinkage of ice sheets that has occurred over the past 50 years. All this environmental damage reduces the atmosphere's ability to repair itself and it raises sea levels, which adds considerable risk to coastal communities. So, even if humankind figures out how to stop putting GHG in the atmosphere, we are likely to be living with more volatile weather for the rest of this century.[5]

ASSET-SPECIFIC, MUNICIPAL, AND TRANSITION RISKS

For real estate investors, climate risks can be understood across three dimensions. The first is the property level and includes the site-specific risks of a precise location and the building that sits at that location. In the industry these are usually referred to as a property's "physical climate risks." The second level are the ways that physical risks threaten supporting infrastructure, supply chains, and the financial health of a community. Sometimes called market-level or "dependency risks," *Exhibit 1* labels them as "Municipality Risks." Finally, there are "transition risks" that relate to changes in regulatory regimes or local mitigation or adaptation measures (such as carbon pricing, or incentives to avoid the emission of GHG) or changes in the insurance market over time.

EXHIBIT 1: THREE CATEGORIES OF RISK

Source: Author

PROPERTY-SPECIFIC PHYSICAL RISKS	MUNICIPALITY RISKS	TRANSITION RISKS
Acute • Extreme weather events: tropical cyclones, floods, & wildfire **Chronic** • Rising temperatures • Rising sea levels • Fluvial flooding (inland waterways) • Drought & water stress • Extreme variability in weather patterns	**Infrastructure Failures** • Roads and bridges • Power outages • Water contamination • Damage to workforce housing • Port damage **Municipal Finance** • Bond defaults • Infrastructure concession bankruptcies • Recovery tax assessments	**Policy & Legal** • Carbon pricing • Regulatory compliance costs • Insurance Premiums • Litigation risk **Technology** • Costs to transition to new technologies **Market** • Changing tenant & investor demand • Changing lender requirements **Reputation** • Increased stakeholder concern and feedback

WHAT PRECAUTIONS CAN INVESTORS TAKE?

This article suggests several steps real estate owners can take to reduce and mitigate climate risks. These risks cannot be eliminated, but they can be managed. A dual course of action—focused on reducing carbon emissions *and* adapting to climate change is a prudent one for real estate investors.

As owners submit data to GRESB and make disclosures toward achieving a net-zero pledge, more sources of information and tools for measuring and making progress toward de-carbonization have become available.

By contrast, preparation for climate change is not as far along in getting traction in many industries, including real estate. This lag exists even though peta-bytes of climate data have been collected and thousands of scientific papers have been published describing the likely scenarios that global warming and higher atmospheric humidity are likely to cause. What are the main reasons for this lag effect?

1. Insurance is still widely available to hedge the short-term effects of physical climate risk.
2. Government subsidies can create moral hazard situations, which may incentivize some asset owners to avoid taking necessary precautions.
3. Climate risk data can be confusing and sometimes contradictory.
4. Links between climate risk and value/rent are not well-understood; climate change has not yet been built into investors' thinking.

Let's look at each of these four factors in greater depth.

1. INSURANCE GIVES A FALSE SENSE OF SECURITY

The biggest issue with reliance on insurance is that this protection is purchased one year at a time. In the years ahead, just when property insurance will most be needed, it will become most expensive and, in some cases, unattainable. Insurance costs in the US have been rising between 15% and 20% per year in the last five years.[6]

In higher-risk areas, such as coastal Florida, insurance costs increased between 50% and 100% in 2023. Real estate investors' time horizon is measured in years and decades. Insurance coverage is locked in just one year at a time. This temporal mismatch will create long-term issues for investors unless they anticipate how insurance markets are likely to react to weather volatility and rising sea levels. A lessening of capital available in the re-insurance market is a clear warning signal that catastrophic insurance is going to be more difficult to obtain in the future than it has been in the past. The re-insurance market plays an important role in allowing insurers to spread the risks in their insured portfolios over a wider pool of assets.

WHAT CAN BE DONE?

There are a number of steps investors can take to prepare for changes in the property insurance market. Risk managers can pay close attention to how insurers are pricing climate risk. They can find out what climate risk data and forecasting models insurers are using and which physical risks they are most sensitive to.

When insurers pull out of markets, as recently happened in California and Florida, risk managers can find out why. Importantly, risk managers can find out if geographic diversification will allow higher-risk properties to get insured alongside lower-risk properties, or if insurers will simply stop writing coverage at certain locations. Finally, they can find out what asset hardening strategies, especially for flood and wind damage, insurers like to see and what effect it may have on their insurance premiums.

The insurance industry—through tens of thousands of underwriters and claims adjusters—have more data on damage estimates than any other source. *In other words, investors: Learn how your insurer is pricing climate risk. Anticipate that insurance may no longer be available in the highest risk locations within the next ten years.*

EXHIBIT 2: RISING PREMIUMS AND FALLING RE-INSURANCE CAPITAL

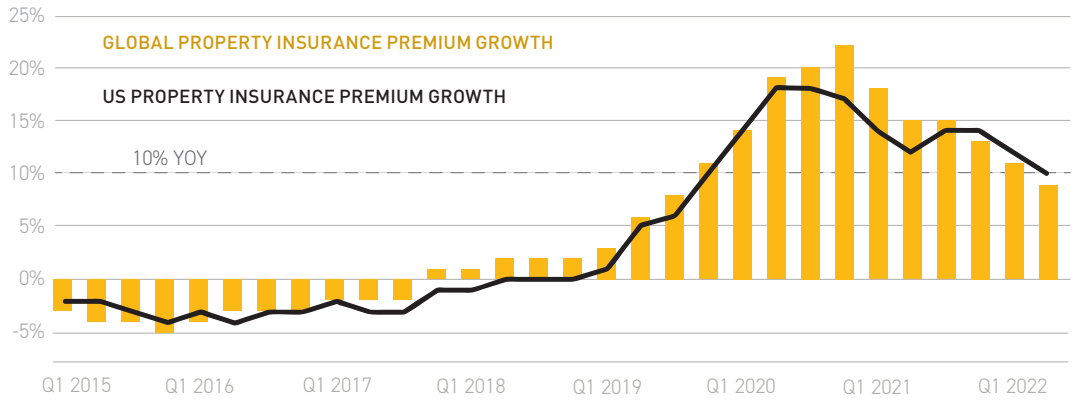
Source: Marsh Global Insurance Market Index, USI Insurance Services, Milliman

PRODUCT LINE	YEAR-END 2021 (YOY)	FORECAST 2022 (FIRST HALF)
Property Non-Catastrophic w/Good Loss History	Flat to up 10%	Down 5% to up 5%
CAT Property w/Minimal Loss History	Up 10% to 15%	Up 5% to 10%+
CAT or Non-CAT Property w/Poor Loss History	Up 20%+	Up 15%+

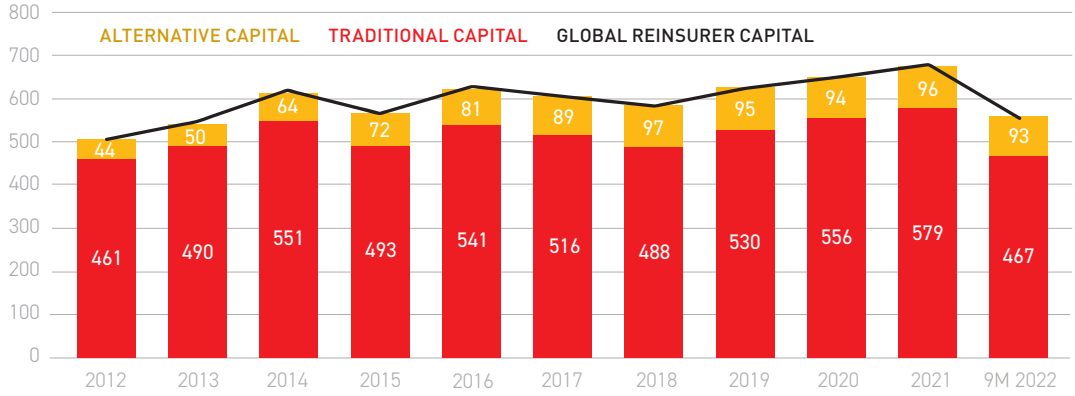
Premiums rising by 10% YOY over the last three years in the US

20% to 100% increases in high loss areas

Must underwrite more than typical 2-3%



GLOBAL REINSURER CAPITAL ($ BILLIONS)



GOVERNMENT ACTIONS CREATE MORAL HAZARD

Millions of property owners believe that the government will be there to pay claims and to rebuild infrastructure when disaster hits.[7] Research done by Rebuild by Design found that 90% of all counties in the US have been eligible for federal disaster assistance at least once between 2011 and 2021.[8]

The US government is truly the insurer of last resort for the entire country. The Federal Emergency Management Agency administers a national flood insurance program and oversees the payout of hundreds of millions of dollars each year in disaster relief, along with a complex web of other state and local sources.[9] Although many of FEMA's programs are designed to benefit households, rather than commercial property owners, Rebuild by Design found that most disaster relief is paid out to coastal cities where the most valuable commercial and residential real estate is located.[10] The difficulties of this system are well-known. It leads to rebuilding in high-risk areas and it also creates a growing and unbudgeted liability for all levels of government at a time when Federal budget deficits are hitting record levels and political opposition to these huge deficits is growing. Finally, studies show it is highly regressive with taxpayers paying for more assistance to wealthy property owners than to lower-income owners.[11]

WHAT CAN BE DONE?

Government support for disaster relief is a cornerstone of the US democratic system, even though the "right" to disaster assistance is not mentioned in the Constitution. A series of Disaster Relief Acts passed in the 1950s, 70s, and 80s will not be repealed, because they created politically popular programs that elected officials often use to gain favor with their electorates. However, FEMA and other federal agencies, including the Army Corps of Engineers, are studying the resiliency practices of other countries and finding much room for improvement.[12]

Requirements are coming to rebuild in a way that takes into account the high and growing likelihood of recurrence of floods, hurricanes, and storm surge damage. Local communities will be incentivized to stop mindlessly replacing roadways and other infrastructure damaged by floods with the exact same design. Investors can track these changes and participate in them by using their insurance claim settlements to "build back better."

Another strategy that is being pursued by Boston, Miami and New York City is to fund the building of enormous sea walls paid in part by assessments levied on real estate owners as well as potentially receiving state and federal assistance. This strategy is impractical for the entire hurricane-prone parts of the eastern seaboard, but in the final analysis it may prove to be less expensive than funding enormous disaster relief requests from state governors when cataclysmic damage occurs. Manmade flood protection infrastructures are very costly to maintain and can subject to failure when faced with more severe climate disasters in the future.

2. CLIMATE RISK DATA IS CONFUSING

In the last five years, dozens of privately funded climate risk data providers have sprung up to meet the rising demand from commercial property owners and insurance companies for granular climate risk data that can be used to assess future risk at specific addresses.

A 2022 review of these data options by ULI and two academics[13] found that risk ratings by different firms were not consistent with each other. Moreover, the approach to measuring risk is not standardized and included highly diverse metrics over different time horizons and for different categories of physical and transition risks. Since this report was published, more firms have emerged with new tools including Value-at-Risk, average annual loss, number of days of business interruption, and 0-100 scores that rate risk on proprietary "black box" scales.

Investment managers are struggling to figure out what they should do with all this new information and how to reconcile inconsistencies among the various providers.

WHAT CAN BE DONE?

As with other new data markets, users should expect constant change and refinement as vendors and users interact with the data and each other.

The rapid growth of new firms has already led to a shakeout as some have been bought by larger companies and others have folded their operations. More importantly, investors need to understand that climate risk analysis at the property level is a relatively new approach—most of the government and academic-sponsored models are calibrated to measure climate risk across counties or regions.

Investors also need to understand that although vendors are providing specific point estimates, they are doing so because they perceive that is what building owners want. The most sophisticated climate risk models produced by universities and meteorological institutes are probabilistic, not deterministic. They produce a range of probable outcomes that can show "direction of travel,", but not precise probabilities or specific loss estimates at the building level. Much is "lost in translation" when downscaling from these probabilistic sources of future climate conditions to specific point estimates, which are then put into new metrics like dollar value of losses or the percentage of a building's value that is at risk.

Similar to property owners' experiences with environmental and engineering risks, broad-brush climate risk data should be treated as a Phase I filter that identifies when a more detailed Phase II or Phase III assessment of the specific risks of a micro-location and whether a specific property has been built to withstand the type of physical risks that are most likely.

In short, a whole "Bento Box" of approaches may be required by investors to prepare themselves and their portfolios for a future world where volatile weather becomes routine.

EXHIBIT 4: BENTO BOX OF CLIMATE RISK RESPONSES

Source: Author

3. CLIMATE RISK HAS NOT YET BEEN FULLY PRICED

The links between climate risk, rents and values are not well-established. Investors and their investment committees do not yet have any "shortcut" methods for understanding what the risk premium should be for locations that are at higher risk for weather-related damage. Behavioral factors, like recency bias, are likely a bigger influence than careful analysis of the costs and benefits of investing in an at-risk property/location.

In the US, like most countries, the most desirable locations for real estate are precisely those places that are most at risk. Water views have a clear and measurable premium in most residential markets, but does the risk of coastal flooding? The uptick in the decades-long migration to the sunbelt during and after the COVID pandemic illustrates how markets may discount future climate risk costs at a higher rate – which more than offset the perceived flow of benefits of warmer weather, low taxes, and affordable cost of living that come along with life in Arizona, Florida, or Texas. This lack of a clear linkage between real estate with higher levels of climate risk and market metrics may still be the case in 2023, but this situation is likely to change over time as more volatile weather damage occurs and as insurance firms continue to raise premiums faster in at-risk zones.

By the year 2033, insurance markets are likely to be charging much higher premiums. Government assistance for disaster relief may be capped or eliminated for the highest-risk locations.

WHAT CAN BE DONE?

Efficient markets are amazingly good at taking an incredible amount of heterogeneous demand-side and supply-side data into account when determining prices. For all the reasons cited above, there are rational explanations why the present and future risks of climate risk are not yet fully priced. Over time, these inefficiencies in the real estate market will likely be overcome as evidence accumulates to show that climate risks are taken into account in pricing behavior.

A far-sighted investor should not take current pricing—either rents or values—as the future state of the market. By the year 2033, insurance markets are likely to be charging much higher premiums. Government assistance for disaster relief may be capped or eliminated for the highest-risk locations. Ten more years of volatile weather data combined with the concomitant property loss data will be hard to ignore. A prudent approach would be to pay close attention to research that sheds light on the circumstances where the linkages are already discernable.

Studies of the Miami office market conducted at the MIT Center for Real Estate found no rent discount for buildings with the highest risks of coastal flooding and wind damage. In fact, there was a slight premium because of the fantastic water views. Nevertheless, the analysis of comparable sales across 57 buildings showed that investors did put a slightly higher cap rate on waterfront Miami office towers.[14] An analysis by CoreLogic of Miami home prices found significant discounting of homes in flood zones.[15] A growing list of similar studies from around the world, show the pathways whereby markets start to price climate risks in real estate.[16] The process is not instantaneous, and it may not adhere to the time horizon of short-term investors.

THE TRAGEDY OF THE HORIZON

One of the biggest challenges of climate risk is what Mark Carney, former Chairman of the Bank of England, called "tragedy of the horizon." Climate change is measured in decades, well beyond the discounted cash flow modeling of most real estate valuations. Nobel-prize winning economist William Nordhaus wrote about the mismatch between the time horizons of markets, politicians, and popular opinion on the one hand, and the decadal trajectory of global warming and rising climate risk on the other.[17]

This mismatch can be bridged by raising the awareness of investment teams of what the future holds. This means doing the homework of studying what your property insurance teams are saying, paying close attention to changes in government policy, and finally paying close attention to market signals that look out beyond just the next five years.

Climate science is probabilistic, not point-specific. In the words of Martin and Weizmann, the authors of Climate Shock: "Climate change belongs to the rare category of situations where it is extraordinarily difficult to put meaningful bounds on the extent of planetary damage." This difficulty should not prevent investors from educating themselves on the tools that are available now for assessing climate risk and for mitigating it through asset hardening or emergency preparedness planning.

Investing, like economics, is based on the principle that there are trade-offs in every decision. A decision to invest in a waterfront asset that appeals to tenants has validity. A complimentary decision to set aside capital expenses to cope with rising insurance costs, business interruption, and asset resilience is also a rational decision. Putting these two approaches side-by-side in a financial model is not impossible—in fact, it is likely to be the right approach.

Translating future rising climate risks in 2040 into financial metrics in a ten-year cash flow model that starts in 2023 is a do-able and prudent exercise for an investor to undertake. Doing so, may mean that there does not have to be a "tragedy of the horizon" in a real estate portfolio.

ABOUT THE AUTHOR

Jacques Gordon is the retired Global Head of Research and Strategy for LaSalle and remains a senior advisor to the firm. He is currently a lecturer and executive-in-residence at MIT.

NOTES

[1] Climate scientists believe these are all "modern-era" records. Earth's hottest periods occurred hundreds of millions of years before humans existed. NOAA estimates that the last time earth was as hot as now was 125,000 years ago. https://www.noaa.gov

[2] JLL Global Research 2022, GHG emissions from property users in urban areas range from 60% to 80% of urban emissions. https://www.us.jll.com/en/trends-and-insights/research/decarbonizing-cities-and-real-estate

[3] See Chaper 1, Climate Shock, Gernot Wagner and Martin Weitzman, Princeton University Press, 2015. Pre- and early industrial era CO2 concentrations were in the 260 to 280 ppm range.

[4] https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide

[5] Ibid. Chapter 3.

[6] Source: Marsh McClennan 2023.

[7] A recent poll by the Robert Wood Foundation and the Chan School of Public Health at Harvard found that after a weather disaster hits, attitudes toward government regulation of carbon emissions changes significantly. https://www.hsph.harvard.edu/news/press-releases/poll-facing-extreme-weather-is-changing-americans-views-about-need-for-climate-change-action/ In a twist on Ronald Reagan's famous quip about the terrifying words: "I'm from the government, I am here to help", it seems that most Americans are counting on weather disaster assistance from the government and from NGOs.

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[9] https://www.pewtrusts.org/en/research-and-analysis/articles/2021/08/27/how-government-can-address-growing-disaster-costs

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[11] https://esg.wharton.upenn.edu/industry-engagement/digital-dialogues/improving-disaster-recovery/

[12] Through supranational organizations like the Resilient Cities Network founded by the Rockefeller Foundation. https://resilientcitiesnetwork.org/

[13] "How to Choose, Use, and Better Understand Climate Risk Analytics" ULI Research Report September 2022

[14] Paper presented at the MIT CRE Climate Change and Real Estate conference December 2022 by Prof. William Wheaton.

[15] https://www.corelogic.com/intelligence/the-impact-of-flood-risk-on-property-values-a-case-study-in-miami/

[16] Buyers for commercial real estate are slightly more risk aware than home owners and price penalties for at-risk locations are still a relatively recent phenomenon.

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[17] William Nordhaus, The Climate Casino: Risk, Uncertainty, and Economics for a Warming World, 2013. Yale University Press.

REVIEWER RESPONSE

Americans can be puzzling people. Based on analytics from the Berkely Climate Lab, they appear to be moving to cities that present the highest risk of mortality from environmental change. Therefore, for real asset investment strategies dependent on population growth (which may be most real asset investment strategies), Jacques Gordon's recommendation that investors manage environmental risk to support investment in poorly scoring geographies, rather than only investing in only well-scoring geographies, appears to be very good advice. Austin, Jacksonville, and Dallas posted solid population growth yet score near the bottom (further to the left) in terms of mortality risk over the long term. There are a few cities, such as Raleigh and Salt Lake City, which present less mortality risk with similarly solid population growth. However, the cities shown here with the lowest mortality risk, such as New York, Cleveland, and Chicago, show lower population growth as well.

In terms of a actual GDP growth versus estimates of climate risk to that GDP, tradeoffs may be similarly difficult. The metropolitan areas shown with the highest annual GDP growth, Austin, Dallas, and Nashville, all score below-average in projected climate-related economic damage risk.

Of course, future economic and population growth may be different than that experienced since the end of 2019 and well-scoring cities such as New York, Cleveland and Chicago may become growth leaders as well. Barring that outcome, Jacques' bento box may be a fitting way for real assets investors to help balance near term investment and environmental goals.

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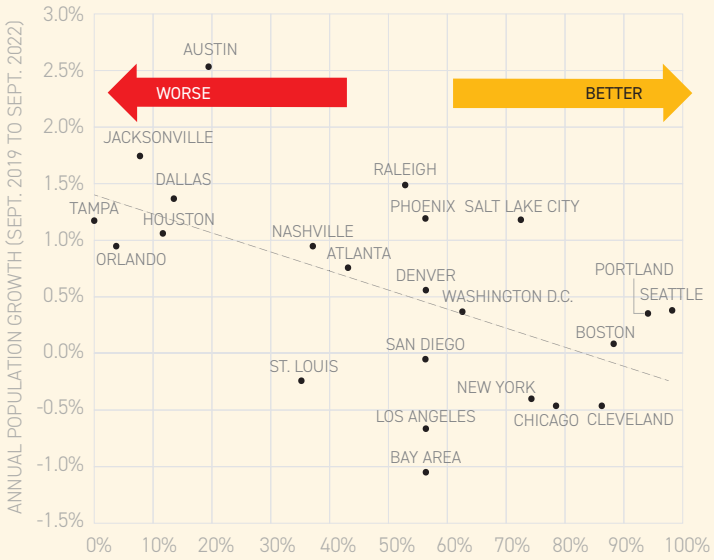
– Hans Nordby
Head of Analytics and Research, Lionstone Investments

Member, Summit Journal Editorial Board

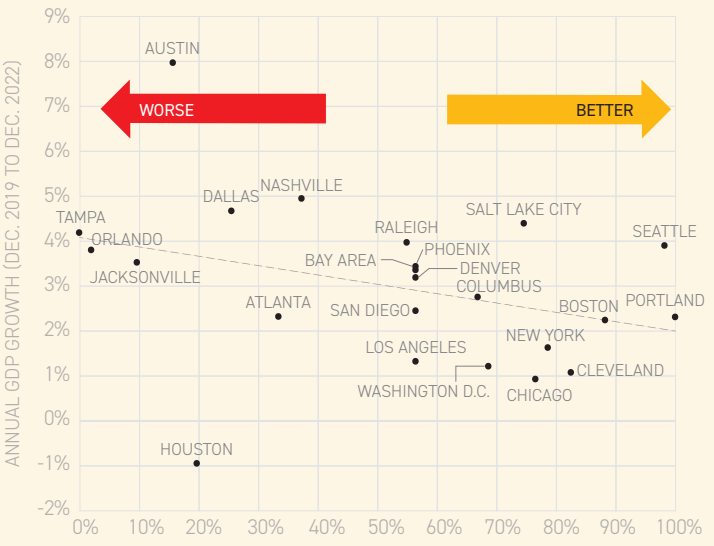
PROJECTED CLIMATE-RELATED INCREASE IN MORTALITY (DEATHS PER 100K) - PERCENTILE RANK

Source: Lionstone Research, Moody's, Berkeley Climate Lab



PROJECTED CLIMATE-RELATED ECONOMIC DAMAGE (% OF LOCAL GDP) - PERCENTILE RANK

Source: Lionstone Research, Moody's, Berkeley Climate Lab



Climate science is probabilistic,
not point-specific.

This difficulty should not
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tools that are available now
for assessing climate risk
and for mitigating it through
asset hardening or emergency
preparedness planning.

CLIMATE OPPORTUNITY AWAITS

Michael Ferrari, PhD
Chief Scientific and Investment Officer
Climate Alpha

Parag Khanna, PhD
Founder and CEO
Climate Alpha

Investors have plenty of reasons to be worried about climate risk, but there are already winners in the new climate economy—and there will be more.

Investors of the new climate economy have plenty of reasons to be worried about climate risk, including the physical damage from extreme weather events and their impact on asset valuations and insurance premiums; chronic issues of water stress and drought; and more stringent regulatory requirements and ESG pressures from shareholders and stakeholders alike.[1]

But there will be—and already are—winners in the new climate economy. Real estate investors should take note of the many ways in which the climate theme impacts their core business but also creates new adjacent opportunities to capitalize on the volatility that lies ahead.

First, at the highest level, it's important to appreciate that climate has taken its place alongside fiscal and monetary policy, demographics, geopolitics, and technology as a macro and systemic thematic driver of not just the economy but civilization itself. SwissRe estimates that global GDP could drop 18% by 2050 if climate change continues unabated.[2] (By comparison, the COVID pandemic slashed only 3.4% from world GDP in 2020.[3]) The world's largest asset class by far—land and real estate—may well suffer the most. Climate change could fuel mass migrations totalling over one billion people,[4] accelerate state failure from Central America to Africa to West Asia, and exacerbate conflict over precious freshwater and other resources.[5] At its root, all finance will become spatial finance in which earth observation and geospatial data are causally linked to economic outcomes.

PRICING CLIMATE RISK

What climate as a macro theme has in common with other drivers is that it should be priced into investment strategies of any duration, intersects with other drivers in complex ways, and creates both enormous risks as well as major new opportunities.

The first domain of opportunity is geographic. Countries that manage to remain climate resilient, politically stable, and offer open markets are likely to become more attractive destinations for global savings to be invested in real estate and other assets. For example, despite the wildfires currently raging Canada in 2023, the country still attracted nearly one million new permanent migrants every single year,[6] with property prices appreciating nationwide.

In industry jargon, "opportunistic" implies risky investments, yet the overlay of climate modelling, fiscal allocation, demographic movements, and other trends can provide high conviction around locations that will relatively outperform.

The new opportunity, then, lies in such antifragile regions better adapted to climate stress. These locations, which span parts of North America such as the Great Lakes to much of central Europe, Central Asia, Southeast Asia, and Japan, are among the locations we describe as "climate oases" that will appreciate in the future. More broadly, a broad zone referred to as the "New North" is likely to absorb a growing share of global savings and capital as it attracts migrants and investment.[7]

EXHIBIT 1: HEAT MAP OF CLIMATE OASES IN THE "NEW NORTH"

Source: Authors

LEADING ADAPTATION

At the intersection of climate change, migration, and sustainable real estate lies an important opportunity for the industry to lead our adaptation efforts. According to UN Habitat, at least three billion people will require better housing by the end of this decade, which means that 96,000 new homes need to be built each day between now and then.[8]

Eventually, rather than building these habitats where people are, we will need to start moving certain populations to geographies less damaged by climate change, at lower risk of future effects, and with better resources and technology. Rising fire and flood insurance premiums, as well as chronic droughts and heatwaves, make this all but inevitable.

Our own Climate Alpha research suggests that investing early in climate-resilient geographies will generate more than 70% higher returns on real estate portfolios by 2030 alone. Property developers, asset managers, and insurers should take heed, accelerating the acquisition of land, construction of affordable housing, and adjustment of premiums to anticipate, encourage, and profit from climate-induced migrations. New technologies should help us to do this with speed. Consider the US-based company Alquist, which can now print a three-bedroom home in just over 24 hours, versus the typical four weeks that the volunteer-powered nonprofit Habitat for Humanity takes to construct one.

The second arena of opportunity lies in the transformation of industrial systems. A narrow focus on energy production alone killed the first clean-tech wave of the late 2000s. Today's movement is far broader. Whether due to scarcity or regulation, there is a rising premium for the sustainable production and utilization of energy, water, food, fiber, and materials—and the transportation networks and supply chains that enable their mobility. This of course applies to the digital economy of data centers as well, underscoring how no aspect of the twenty-first century global economy can ignore the influence of climate factors, both as cause and effect.

The quest for "circular" or full lifecycle endogeneity and accounting is generating new business models in countries rich and poor, reshaping global trade flows with an emphasis on more localized systems. European mandates such as Article 8 and 9 sustainability themed funds will further create opportunities to invest into the climate adaptation thesis.

This trend is being actively reinforced by the new wave of industrial policies sweeping the West. Whereas government support for critical sectors has been common in Europe, the US's simultaneous Inflation Reduction Act (IRA), Bipartisan Infrastructure Bill, and CHIPS Act are collectively stimulating an industrial renaissance whose geography will boost economic multiplier effects across the country. Importantly, investors should not only track this growing corporate investment footprint—which amounts to nearly $1 trillion between 2021–2022—but also whether or not the locations receiving investment exhibit climate resilience and adaptation to ensure their continued desirability. Similar trends are underway with Europe's Green Deal, and China and Japan's industrial policies and R&D in battery and materials technologies.

EXHIBIT 2: CLIMATE-RESILIENT GEOGRAPHIES WILL GENERATE HIGHER RETURNS

Source: Authors

LAND VALUE APPRECIATION: BASELINE SCENARIO VS. LIKELY WARMING SCENARIO

	10-year appreciation under baseline scenario		10-year appreciation under RCP 8.5 scenario
Top 20 countries in baseline scenario	**244.4%** (9.35% p.a.)	As climate risks accelerate, growth across the 20 countries that appreciate fastest under business as usual assumptions, will slow significantly...	**228.9%** (8.63% p.a.)
Top 20 countries under RCP 8.5 scenario	**237.2%** (9.02% p.a.)	...while countries that actually appreciate the fastest are likely to be missed using forecasts that rely on business as usual assumptions.	**302.3%** (11.70% p.a.)

73.4% gain over 10 years using Climate Alpha

CLIMATE TECHNOLOGIES

Climate tech has thus emerged as an asset class unto itself due to the enormous investment driven by venture capital and institutional investors.[9] Global capital markets from pensions and sovereign wealth funds to banks and family offices are now chasing climate tech deals at all stages from seed to IPO. This will lead to entirely new platforms of investable assets, driving asset allocation and capital deployment in innovative ways that all have very strong implications for the built environment, whether greening buildings or fortifying electricity grids and building more efficient primary and secondary supply chains.

The laws of physics may determine the fate of humanity more than the geopolitical balance of power. But already AI is making a case as a third force alongside and conditioning these two. Though the current vogue is to posit AI as a singular battlefield for supremacy, in fact it is a rapidly democratizing suite of technologies that can help any society—or collection of them—to anticipate, model, and steer individual, company, market, economy, and government behavior to adapt to the climate challenge. Simulations of rising sea levels, floods, droughts, and heatwaves enable the public and private sectors alike to avoid making unnecessary investments in what are likely to be stranded assets, energy grids to balance supply and demand loads, and both active and passive investment strategies to build portfolios favoring firms with less climate risk and higher resilience to climate shocks.

Such scenario planning has been officially mandated by the US Federal Reserve, which this year required major banks to model climate risks and the impact on their portfolios, both to their physical assets as well as in their underwriting. Understanding how a singular event—such as a Category 5 hurricane landfall in lower Manhattan—might unfold in terms of immediate damage to infrastructure and real estate, followed by longer-term outward migration and declines in both economic growth and tax revenues, requires forecasting capabilities that integrate both climate and socio-economic variables.

As we watch the frequency and severity of climate disruptions mount in real time, investors and regulators need to pay much greater attention to how such toolkits can model complexity and deliver insight for their investment decision-making.

As we learned from Charles Darwin, those who adapt are the most likely to survive and thrive.

ADDRESSING THE FUTURE

Addressing climate change requires both mitigation and adaptation, and we believe the latter represents an even better business opportunity. As we learned from Charles Darwin, those who adapt are the most likely to survive and thrive. Small investments result in significant preparation for an unpredictable future.

Sooner rather than later, as with other macro-drivers, climate-themed investing will not be distinct from other forms of investment. Climate investing will simply be . . . *investing*.

In other words: climate risk is here, and climate opportunity awaits.

ABOUT THE AUTHORS

Dr. Michael Ferrari is chief scientific and chief investment officer at Climate Alpha, an AI-powered software platform dedicated to future proofing global investment. Dr. Khanna is Climate Alpha's founder and CEO. He is also author of *MOVE: Where People are Going for a Better Future (2021)*.

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PREMIUM PRICE TAGS

Bob Geiger
Principal, Executive Director
Partner Engineering & Science

By gathering key property data and providing proper documentation to insurers, CRE owners may be able to secure reduced premiums and/or coverage for properties in high-risk areas

It's no secret the US property insurance market is in crisis and costs are at an all-time high. Natural disasters and climate-related events have led to over $100 billion in insurable losses annually for the past five years. Premiums have doubled, and in riskier areas, risen by 500In addition, replacement costs have increased due to rising construction material costs and labor shortages. Underwriting is also challenging, with higher levels of scrutiny required to establish insurable value and assess risk. Some assets, particularly those in coastal or disaster-prone areas, may not be insurable at all.

Fortunately, there are tools available to support commercial real estate (CRE) investors and property owners seeking the coverage they need. A multi-disciplinary valuation approach can support accurate replacement values. And by gathering key property data and providing proper documentation to insurers, CRE owners may be able to secure reduced premiums and/or coverage for properties in high-risk areas.

IMPROVING ACCURACY IN REPLACEMENT VALUES

Marshall & Swift and RSMeans, both common sources for construction data and commercial building costs, update their costing data periodically: either monthly, quarterly, or annually.[1] These periodic updates may not be frequent enough to capture the price fluctuations and volatility of the post-COVID markets, with labor and materials shortages driving up costs.[2] While the lower premiums correlating to a lower estimated replacement value may be appealing, no one wants to be underinsured in the event of a loss.

In March, a tornado caused significant damage to three warehouse properties in Texas. These buildings, owned by an institutional investor, comprised a central region product assembly and distribution facility occupied by a large online retailer. Insurance coverage based on standard cost guides fell far short of the actual cost to repair and replace damaged building structural elements and systems, and further failed to adequately cover the facility's process equipment. The event prompted the institutional investor to request development of a custom scope to value the repairs, improvements, and equipment at the subject facility, and also take a critical look to identify similarly under-insured assets in their portfolio.

In another example, an investment management firm realized that they were grossly underinsured at three logistics warehouses in the southeast. Their existing policy used Marshall & Swift numbers. Plus, the long-term tenant of these buildings, an online retail juggernaut, had made significant improvements to the base buildings. The investment firm needed to realign the insurance replacement value to factor in actual condition of the building systems, understand the enhanced value from tenant improvements, and incorporate a reality check on construction material and labor costs.

Key to the efforts in establishing accurate insurance replacement values is going beyond industry cost guides to observe and document specific conditions of the building systems at the property. Professional observation and judgement, along with collaboration with building maintenance and local contractors, commonly leads to adjusting repair and replacement estimates either up or down from the guide.

Recent regional construction budget data and national construction data by asset type that consider size, type, use, geography, environment, and trends can be correlated for insight and justification of actual construction budget data. Engineering and construction expertise and data, layered with asset valuation and equipment appraisal, form a richer valuation methodology than relying on standardized guides. Comparable sales references consider the quality of the tenant and remaining lease term, and specialized process equipment expertise fill gaps in the common insurance replacement value calculations. While there is no guarantee of actual construction costs in the event of an insurance loss—especially those related to natural disasters that often create a surge in the price of labor and materials—this multi-pronged approach provides a researched, justified, and defensible solution to a complicated underwriting process to get policies done or renewed.

RESILIENCE DATA FOR UNDERWRITING

With wildfires and earthquakes in the West, hurricanes and severe storms in the East and South, and tornadoes and severe storms in the Midwest, it's tough to name a location that doesn't qualify as disaster-prone. Insurance providers are reluctant to take on properties in "high-risk" areas, and if they do, rates can be astronomical. In the past, insurers based this high-risk status on location alone, with little regard for the building's construction or resilience. Today, insurance providers are beginning to consider resilience factors when determining whether—and for what price—to cover assets in high-risk areas.

The underwriting process in these determinations involves a very high level of scrutiny of the construction and resilience features of each property. Simply put, generating data to help inform insurance underwriters of key resilience-related attributes assists insurers in moving forward or reducing inflated premiums.

For example, to alleviate the underwriter's concern about the risk of flood damage to an electrical room, demonstrate resilience measures such as:

- Relocate susceptible equipment above predicted flood levels with waterproof enclosures to address flood concerns.
- Confirm clear roof drainage including condensate lines from HVAC equipment and proper drainage away from the foundation.
- Take (and document) action to ensure water does not pond on the roof or the building perimeter.
- Dig swales to move stormwater runoff away from a property.
- Choose gravel or brick pavement in areas nearest the building instead of concrete or asphalt.

In addition to having an emergency response plan to continue operations, practical, documented mitigants can make the difference during hazardous and challenging conditions.

With the frequency and number of severe weather and climate-related events over the past several years, insurance carriers are becoming increasingly sophisticated regarding risk and resilience factors related to building construction. Many will require a completed questionnaire scrutinizing the construction details of a property and its systems.

Recently, a developer seeking to acquire a portfolio of 23 buildings in Naples, Florida—very near the site of Hurricane Ian—learned just how granular that scrutiny can be. Beyond the basics such as construction and occupancy class; year of construction and any upgrades; age/type of roof; and so forth, the insurer required detailed information on building components, including cladding (covering or coating) rating, roof sheathing (decking) attachment, and the wind resistance of virtually every aspect of the building envelope. The granularity on wind-related factors included details on roof geometry, roof anchors, roof flashing (metal that directs the water) and coping (sheet metal that caps the vertical wall on a roof), and wind bracing for any rooftop equipment.

Much the way previous conflicts and liabilities prompt the addition increasingly specific and numerous clauses to other types of contracts, this insurer had become very savvy to exactly which systems, components and attributes affected their risk exposure, and they would not underwrite the developer's portfolio without examining each in detail.

In response, the developer added a custom scope to its due diligence services for each site. The scope, referred to as an "Insurance Resilience Supplement," was a supplement to the Property Condition Assessment (PCA) scope already being performed at the 23 sites. Leveraging the experienced condition assessment professionals already deployed to the site made sense, given the overlapping expertise in building systems required by PCAs and the insurance questionnaire, and the convenience of gathering data for the questionnaire and PCA in the same site visit. These site observations, along with research of historic records, photos, and plans, were used to satisfy the insurer's requirements.

Today, insurance providers are beginning to consider resilience factors when determining whether—and for what price—to cover assets in high-risk areas.

Engaging expert help can pay for itself in reduced premiums, reduced risk exposure, and increased property value.

SUPPORT FOR INSURANCE CHALLENGES

Changes in the insurance market and the increased demand for resilience in general may leave many commercial real estate owners and managers with questions, such as:

- What is the true replacement value of my CRE asset(s)?
- How resilient is my property/portfolio/target acquisition?
- How can I improve resilience?
- How can I document/demonstrate resilience to insurers?

While they appear daunting, insurance challenges can be overcome with the right data and documentation. Some measures may be complicated and involve multiple disciplines such as engineering, construction, sustainability, and valuation. In these scenarios, engaging a multidisciplinary consultant who can handle complex scenarios and evaluate CRE assets through a variety of lenses can be invaluable.

A partner with full-service capabilities can assess the current state of a portfolio, recommend resilience improvements based on business objectives (insurability, rates, resale, risk management, etc.) and help implement and document those improvements. Engaging expert help can pay for itself in reduced premiums, reduced risk exposure, and increased property value.

ABOUT THE AUTHOR

Bob Geiger is Principal, Executive Director, for Partner Engineering & Science, a national provider of multidisciplinary engineering, environmental, construction, energy, and technology services for real estate owners and investors.

NOTES

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WEB3 IN REAL ESTATE DECARBONIZATION

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Web3 applications offer unique capability to monetize real estate carbon value—but Web3 tech alone cannot solve dysfunction of the carbon marketplace.

The building sector's decarbonization progress made to date has not been enough to achieve the target of limiting global warming to 1.5°C.[1] According to UN's Intergovernmental Panel on Climate Change (IPCC), many of these limiting solutions already exist, but what is missing is the political ambition and financial incentives needed to make this happen at scale.[2]

To avert a catastrophic climate disaster, industries need to mobilize capital at the requisite scale and speed. However, as things stand, the investment in building decarbonization is unlikely to increase radically in the next few years. One of the biggest challenges to sea-change in this space is the financial barrier of decarbonization on the demand and supply side of the building sector. This barrier will lead to significant investment gaps and a subsequent market failure to deliver the net zero carbon emission target.

Monetizing carbon value in commercial real estate through the voluntary carbon market has been explored by various research programs and modeling, but implementation has faced challenges. For example, a 2010 MIT Center for Real Estate research paper explored the idea of monetizing carbon value in commercial real estate via the voluntary carbon market.[3] In 2020, the US commercial and residential sectors generated significant carbon emissions with 1.8 GMtCO2e. Approximately 5% of these emissions could qualify for tradable carbon offsets, resulting in a potential market value of $2.1 billion annually, with $45 per ton of Co2e, and the $30 billion asset value with a capital rate of 7%.

However, the idea has yet to gain traction due to regulatory and technological obstacles. Four challenges hinder the progress of tapping into the significant financial value that exists in commercial real estate decarbonization:

1. Lack of a robust, consistent methodology to measure and verify carbon emission reduction
2. Lack of a highly streamlined, automated, cost-effective process to monetize carbon reduction from individual properties
3. Split incentives between stakeholders in the decarbonization value chain, especially owners, operators, and tenants
4. A failing voluntary carbon market, which otherwise allows carbon emitters to offset their emissions by purchasing carbon credits emitted by projects targeted at removing or reducing greenhouse gas from the atmosphere.

EMERGING WEB3 APPLICATIONS IN DECARBONIZATION

In recent years, many notable use cases have emerged in to solve climate challenges with Web3 technologies. In 2022 COP27, the Climate Change Coalition expressed interest in using blockchain to develop greenhouse gas emissions accounting.[5] US President Biden's March 2022 Executive Order 14067 calls for a discussion of the potential uses of blockchain for monitoring or mitigating climate impacts.[6] The Hyperledger Climate Accounting Special Interest Group (CA2SIG), uses blockchain, AI, IoT, and Big Data to create a climate accounting system to pool, verify, and certify emissions data of corporate supply chains to create efficient marketplace.[7]

Web3 refers to applications running on decentralized blockchains, facilitating transactions without intermediaries. Web3 applications are built on three key technologies: blockchain, smart contracts, and digital assets. The technology represents a paradigm shift towards decentralization in digital application business models. Blockchain serves as a decentralized database that records assets and transactions. Smart contracts automate transactions based on predefined logic. Digital assets, such as tokens and NFTs, provide a permanent record of value.

Web3 applications are built on three key technologies: blockchain, smart contracts, and digital assets. The technology represents a paradigm shift towards decentralization in digital application business models.

Web3 technology has gained traction with projects like Ethereum, enabling user-friendly interactions with the blockchain through decentralized applications (dApps). These dApps allow users to perform actions like generating audit reports or trading tokens directly on the blockchain.

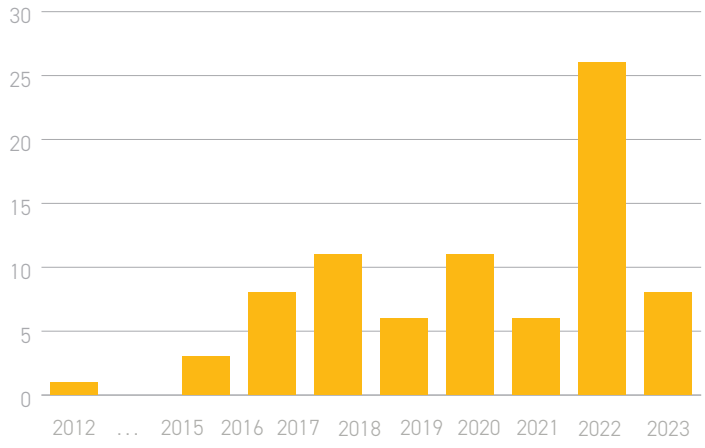
With the rise of the voluntary carbon market, increasing carbon data disclosure mandates, and advancement in Web3 technologies, an emerging cohort of Web3 applications is helping corporations track, tokenize, and transact energy or carbon impact.

For this present analysis, we compiled a list of 79 Web3 startups that have decarbonization solutions (founded between 2012 to November 1, 2022) from Pitchbook, Crunchbase, World Economic Forum, CB Insights. We excluded all startups in the metaverse (AR/VR).

Year founded: 71% of the startups in this analysis were founded from 2018 to present, with 2022 serving as a pivotal year for Web3, when it evolved from a nascent sector to a mainstream industry; 26 of the 79 startups were founded in 2022.

EXHIBIT 1: FOUNDING DATES FOR STARTUPS

Source: Authors



Geography: The US is home to 29 out of the 79 startups, followed by the UK (10), Singapore (7), Canada (6), and Germany(5). Nine out of the top ten most-well funded startups are also based in the US, suggesting a more mature and developed market.

EXHIBIT 2: GEOGRAPHIC LOCATIONS FOR STARTUPS

Source: Authors

Most well-funded startups: The top ten most well-funded startups each have raised more than $20M of funding. Most are in Series A and B, except for Data Gumbo. Data Gumbo raised a $4M Series C in August 2022. Regarding categorization, there is no evidence to conclude favourability, but Patch and FlowCarbon are carbon offset marketplaces with carbon tokens.

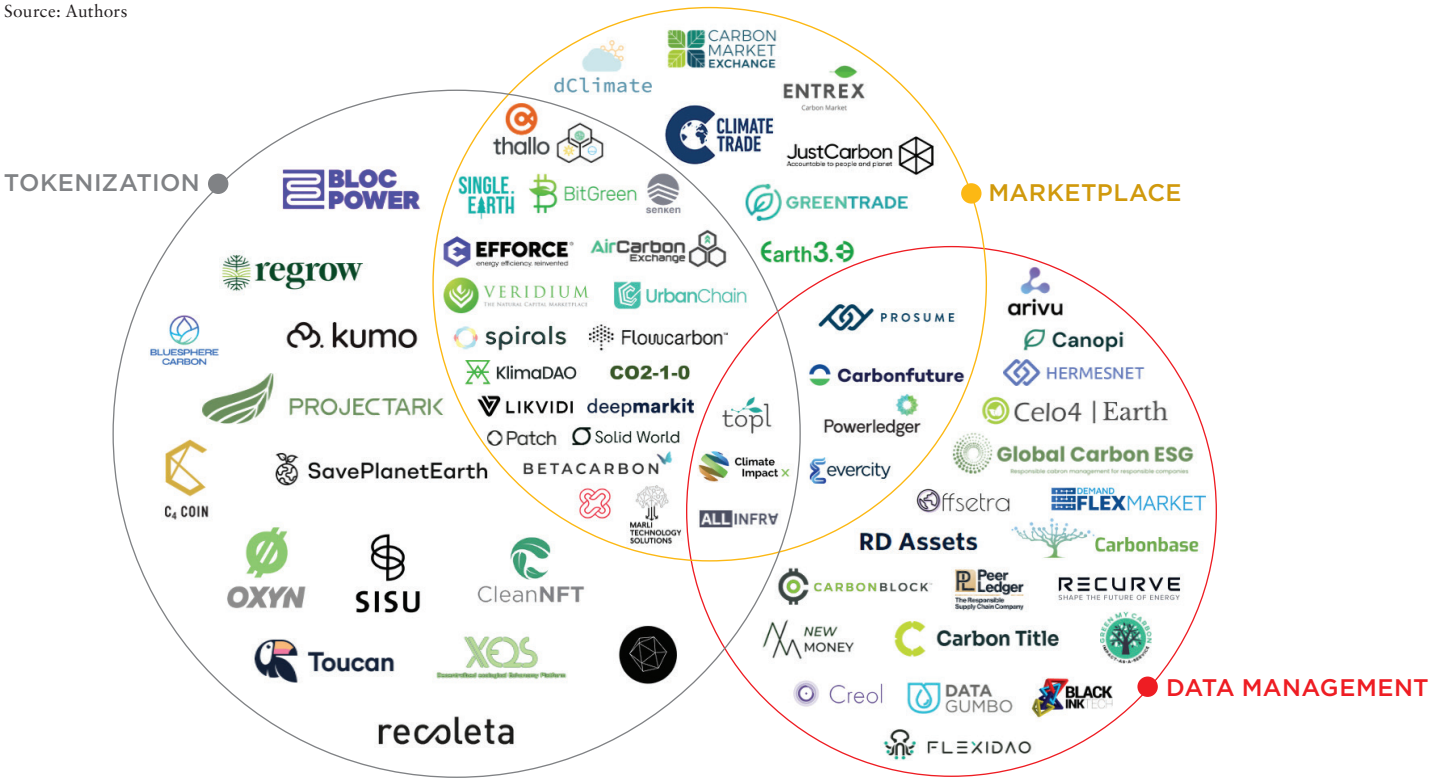
EXHIBIT 3: TOP 10 MOST -WELL FUNDED STARTUPS

Source: Authors

NO	STARTUP LOGO	AMOUNT RAISED (IN US$M)	MOST RECENT ROUND (SERIES A,B,C ETC)	HQ LOCATION (CITY + COUNTRY)	CATEGORY
1	BLOC POWER	265	B	New York, US	Token
2	Patch	81	B	San Francisco, US	Token/MP
3	Flowcarbon	71	A	New York, US	Token/MP
4	regrow	63	B	San Diego, US	Data MGNT/Token
5	BLACK INK TECH	50	B	Charleston, US	Data MGNT
6	Powerledger	35	ICO following by a grant	Perth, Australia	Data MGNT / Token /MP
7	RECURVE SHAPE THE FUTURE OF ENERGY	32	B	Mill Valley, US	Data MGNT
8	DATA GUMBO	26	C	Houston, US	Data MGNT
9	Cleartrace	24	B	Austin, US	Data MGNT
10	topl	20	A	Houston, US	Data MGNT / Token / MP

EXHIBIT 4: THREE CATEGORIES OF STARTUPS

Source: Authors



THE THREE CATEGORIES OF STARTUPS

This cohort of 79 startups focused on decarbonization are using Web3 technologies to do three things: data management (45 out of 79 firms); tokenization (31 out of 79 firms) and marketplace (42 out of 79 firms). But can they offer unique capabilities to tackle the four challenges in monetizing building decarbonization?

To answer this question, we examined each of their applications to unpack what problems are they solving, and what are the unique capabilities and use cases? The goal was to discover if and how these applications are different from the existing approaches to accelerate decarbonization in commercial real estate.

Our findings are a mixture of "the emperor's new clothes" and "the next big thing." Broadly, Web3 startups are immature; most are at or before proof-of-concept. Nonetheless, Web3 technologies can play a role in providing improvements to carbon data management, aligning stakeholders' incentives, and increasing efficiency in the energy or carbon markets.

Data management startups focus on two main use cases: carbon tracking and measurement, and audit automation.

1: DATA MANAGEMENT

Web3 technology uses blockchain to record internet-connected device measurements, ensuring trusted and tamper-proof environmental data. Data management startups in the decarbonization space leverage Web3 and other technologies including IoT, AI, and ML to monitor decarbonization initiatives in real-time and improve accuracy. Blockchain and smart contracts enable data transparency and immutability, benefiting asset owners, lenders, insurers, and rating agencies.

Data management startups also focus on two main use cases: carbon tracking and measurement, and audit automation. These solutions provide verifiable energy and carbon records, automate sustainability reporting, and ensure accurate measurement of carbon consumption. For example, Recurve helps measure energy usage and efficiency impact, while Black Ink Tech.io and Data Gumbo automate ESG reporting.

Measurement, verification, and audit automation can be addressed using none Web3 approach. Singularity, Wattcarbon, and Resurety record real-time emissions data to a centralized database. These solutions allow the customers to visualize energy data or automatically scale back their emissions. The existing approach is a centralized model. Applications developed in this model are proprietary, and their functionality and governance are controlled by centralized institutions, with revenues distributed to shareholders.

The difference of the Web3 approach is it utilizes open standards and decentralized protocols. The control is no longer centralized in large platforms and aggregators but is distributed through blockchains and smart contracts. This means that trusted, centralized intermediaries may no longer be necessary for data sharing and value exchange. For example, Cleartrace and FlexiDao operate with the Web3 approach by recording energy source emissions data to a public blockchain. Brookfield Properties used Cleartrace's ledger to digitally match One Manhattan West's electrical consumption to generate immutable and auditable records of reduced consumption for all hours of the year.

The main value brought by Web3, within and beyond the decarbinzation niche, is the immutability of the record and not requiring intermediaries. Data management protocols using public blockchains provide permanent records through smart contracts, independent of the creators' business status. However, Web3 approaches have limitations, such as high costs associated with storing and processing large volumes of data on public blockchains. A Web3 targeting the removal of intermediaries as an advantage must demonstrate that the added trust provides more value than the costs associated with storage and processing via the blockchain. Existing companies such as WattPower can also use open standards to automatically producing audit reports, which performs the same function as smart contracts in the Web3 approach. For these reasons, using blockchains for data management does not provide additional value until improved protocols reduce storage and processing costs drastically.

2: TOKENIZATION

The second category of Web3 apps for deccarbonization is tokenization, which simplifies the sourcing and financing of carbon credits by representing them as digital units on the blockchain. This brings transparency, generates pricing data, and facilitates pre-purchase agreements on a public ledger. Tokenized carbon credits can be divided into smaller units, benefiting small-scale projects and enabling easier buying, selling, and retirement of credits. For example, SolarCoin, a blockchain-based cryptocurrency, encourages the adoption of solar panels by tokenizing solar photovoltaic assets. Recognized by IRENA, SolarCoins are issued for each megawatt-hour of solar power generated and can be traded for fiat currency. With over 1.7 million MWh of solar energy incentivized across 44 countries, SolarCoin proves its effectiveness in promoting renewable energy adoption.[8]

Startups in the tokenization category focus on three key use cases. The first is issuing utility tokens that directly link their value to carbon emissions. These tokens store information related to certified carbon credits, auditing, and project monitoring, fostering transparency and growth in the voluntary carbon market. Companies such as Topl, AllInfra, and Single.Earth's MERIT enable investors and stakeholders to trace the origin of GHG data associated with these tokens, providing access to data and economic rights.

The second use case for tokenization involves regenerative finance (ReFi) and decentralized finance (DeFi). ReFi on the blockchain estimates the value of natural assets based on their regeneration and preservation properties, challenging traditional finance models. Startups such as KlimaDAO and Toucan utilize utility tokens to monitor, automate reporting, and create additional financial benefits, fostering peer-to-peer transactions.

The third use case revolves around non-fungible tokens (NFTs) that certify climate impact. Platforms such as IMPT offer tokenized carbon credits as NFTs, representing specific CO2 emissions to be removed from the atmosphere. IMPT incentivizes retailers to contribute a portion of their sales margin to environmental projects, and members can track their carbon score and earn points through burning NFTs and collecting IMPT tokens.

Startups in the tokenization category focus on three key use cases.

1.) Issuing utility tokens that directly link their value to carbon emissions.

2.) Tokenization involves regenerative finance (ReFi) and decentralized finance (DeFi).

3.) Non-fungible tokens (NFTs) that certify climate impact.

BlocPower, a real estate sector initiative, aims to tokenize building decarbonization through a protocol for environmental justice carbon offset tokens. These tokens represent energy savings and offset greenhouse gas emissions from BlocPower's retrofit projects. However, the tokenization initiative is still in the conceptual stage due to several challenges. Firstly, the application's ability to establish token pricing is hindered by the absence of a functioning voluntary carbon market, with Verra and Gold Standard proving inefficient and difficult to approve methodologies. Additionally, the lack of digital infrastructure in buildings poses a challenge in automating and aggregating carbon data, limiting the ability of smaller landlords to leverage the monetary value of carbon reduction. These obstacles have delayed the launch of BlocPower's tokenization initiative, highlighting the need for market development and digital infrastructure improvements.

Tokenization has the potential to address broader decarbonization challenges, such as split and misaligned financial incentives among stakeholders. By aggregating carbon value, tokenization facilitates trading accessibility and incentivizes pro-environmental behavior. NFTs can be used to reward conservation efforts in buildings and encourage energy optimization. While BlocPower and other similar tokenization initiatives are generally still in the conceptual stage, they have the potential to overcome hurdles related to token pricing and the lack of digital infrastructure in certain sectors.

3: MARKETPLACE

The third category of Web3 applications for decarboniation is the marketplace, which focuses on improving the transparency and efficiency of carbon and renewable energy trading. Startups such as Flowcarbon, Bluesphere Carbon, Carbonfuture, Patch, and UrbanChain offer Web3-enabled trading infrastructure, bringing voluntary carbon credits and renewable energy credits onto the blockchain. These marketplaces streamline the process of evaluating and purchasing carbon credits from projects that impact the climate, biodiversity, and local communities.

Carbon Trade Exchange (CTX), Xpansiv CBL, AirCarbon Exchange (ACX), EKO Marketplace, and Thallo are blockchain-based exchanges that provide secondary markets for tokenized carbon credits, adding liquidity and data transparency to carbon credit trading. There are also peer-to-peer renewable energy trading platforms such as Urbanchain, enabling decentralized energy sharing using blockchain technology; FLEXMarket, a demand flexibility platform that compensates aggregators for delivering value to the grid; and the Reneum Institute in Singapore, which operates a vertically-integrated renewable energy marketplace, issuing renewable energy credits (RECs) called RENW to certified clean energy producers, allowing them to monetize their energy production and accelerate renewable energy deployment.

Blockchain platforms in the carbon market offer liquidity, transparency, security, and automation through smart contracts, addressing issues such as double-counting and fraud. However, while blockchain improves the efficiency of trading, it may not solve the fundamental challenges of the voluntary carbon market, which requires more regulation and buyer trust.

In other words, Blockchain cannot solve the root cause of voluntary carbon market failure. Verifiable data linked to carbon tokens is crucial to establish a risk profile and encourage investment in high-quality carbon credits. Each carbon project has unique characteristics and benefits, and platforms with verifiable data help investors identify, source, and track high-quality carbon projects. Regulatory measures and verifiable data are necessary to address the underlying challenges of the carbon market.

Blockchain platforms in the carbon market offer liquidity, transparency, security, and automation through smart contracts, addressing issues such as double-counting and fraud.

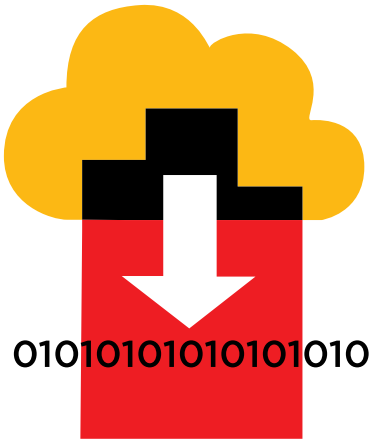
TRACKING, TOKENIZING, AND TRANSACTING

The following table summarizes how emerging Web3 startups are helping corporations track, tokenize, and transact energy or carbon impact.

EXHIBIT 5: HOW WEB3 STARTUPS HELP WITH TRACKING, TOKENIZING, AND TRANSACTING CARBON IMPACTS

Source: Authors

CATEGORY	USE CASE	CURRENT APPROACH	WEB3 APPROACH
Data management	Carbon measurement and verification	IoT devices collect and store data on a centralized platform, e.g., smart meters. Examples: *Singularity, Watttime, and Resurety*	IoT devices collect data and store data on blockchain that is verifiable and immutable, and thus tamper-proof, Examples: *Carbon base, carbon title, ClearTrace, FlexiDao*
	Audit Automation	Manual generation of energy audit reports (e.g., Excel) or generation of reports via a centralized 3rd-party service. In some cases, audit reports can be automatically generated using open standards that cannot be altered.	Energy audit reports are generated based on transparent, pre-defined rules specified in a smart contract. The smart contract generates these reports using tamper-proof data recorded on the blockchain. Example: *Recurve, Evercity,*
Digital Asset/ Tokenization	Green building certification	Carbon footprint assessment conducted as part of a third-party certification process (e.g., LEED, BREAM)	Carbon footprint reductions are converted to digital tokens representing avoided emissions. These tokens can then be held to represent the value of reduction efforts or be exchanged for goods and services. Example: *Topl, AllInfra*
	Energy efficiency financing	Traditional bank loans, energy performance contracts	Digital tokens are used for crowdfunding of decarbonization projects; retrofit projects receive tokens in exchange for carbon offsetting. Tokens can be lent via decentralized finance (DeFi) infrastructure. Example: *SolarCoin, Green Bonds*
	Stakeholders engagement	Manual tracking and incentives for energy savings programs; competitions on the conservation effort Example: Utility incentive, green lease	Incentives and rewards are automatically and transparently administered to tenants who meet reward criteria; smart contracts administer these based on tamper-proof data logged to the blockchain. For example, a climate NFT, or climate non-fungible token, is a digital asset that represents a specific environmental benefit or impact, such as a carbon offset or a renewable energy credit.
Marketplace	Primary Market-Carbon offset Platform	Carbon offset assessment conducted as part of a third-party certification process (e.g., Verra)	Offsets are automatically tracked, evaluated, and tokenized by smart contracts reading tamper-proof historical data logged to the blockchain by IoT devices.
	Secondary Market-Carbon offset exchange	Centralized trading platform for carbon offsets. Run by the centralized institution to facilitate transactions and provide spot prices for CO2 offsets. Carbon TradeXchange	Automated, transparent marketplaces determine the price of carbon offsets, which are traded as digital assets via a smart contract. (Alternatively, traditional marketplaces are used for trading tokenized carbon credits). The added liquidity helps drive supply and demand by making carbon offset pricing more reliable. Example: *AirCarbon*
	Renewable Energy platform	Centralized control and management, some with grid integration, e.g., of virtual power plants	Decentralized control and management (i.e., power trading is negotiated among peers, rather than by the central utility company) example: *FlexMarket, Reneum*



In the existing startup landscape, Web3 applications offer unique capability to monetize real estate carbon value through increased data transparency and aligning stakeholder via tokenization to unlock new sources of investment.

Given Web3's decentralized and immutable nature, it can play a critical tool in helping address climate change. In the existing startup landscape, Web3 applications offer unique capabilities to monetize real estate carbon value through increased data transparency and aligning stakeholder via tokenization to unlock new sources of investment. But the Web3 technology alone cannot solve the dysfunctions of the carbon marketplace, because a. functioning voluntary carbon market needs centralized and coordinated regulations, which is a must-have to govern the carbon accounting and corporate claim standards.

The Web3 market needs policies and standards for monitoring carbon offset projects. And besides carbon market regulation, Web3 also needs to meet certain technological and industry prerequisites to achieve its disruptive potential. These prerequisites include automated data collection systems involving IoT devices (e.g., for carbon credit verification), and all data sources contributing to a final report must be verifiably embedded in the Web3 ecosystem. Any gaps in this ecosystem break the chain of trust and introduce an opportunity for tampering or introducing illicit data. The distributed ledger must become faster and memory-efficient to process and store the large volume of data that needs to be recorded for climate impact monitoring. The industry also needs a straight-through process for issuing, trading and valuing carbon and decarbonization actions via a blockchain platform. The main goal of this process is to enable the digital monitoring and measurement, reporting, and verification tools that allow for the creation, allocating, and trading of carbon products by directly connecting the performance of an ESG action and/or asset to an industry-recognized mechanism and financial products.

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ADAPTING TO REUSE

Josh Benaim
Founder & CEO
Aria

Today's conventional wisdom in commercial real estate says that adaptive reuse is not an economical investment. *It's inefficient. It costs an arm and a leg. And it doesn't work on 1960's to 1980's vintage behemoths that make up the bulk of the vacancy due to the depth of the floorplate.*

Fortunately for investors, our cities, and the planet, these received truths are mostly wrong.

At my company, Aria, we have created apartments out of everything from a 1960's Edward Durrell Stone office building with 40,000-square-foot floor plates to an IMF dorm to the former Kansas City Athletic Club; think handball courts into lofts and a grand ballroom. It's difficult, but it's doable. And it's necessary.

Conventional commercial real estate orthodoxy suggests that adaptive reuse is not an economical investment—but the facts tell a different story.

While much of the nation suffers from an affordability crisis, there's 100 million square feet of vacant office in New York alone. Hybrid work models have hit aging office stock hard, leaving their mark on downtowns across the country. A recent McKinsey study projected a decline of 13% in office demand by 2030 in supercities across the globe. Residential demand, meanwhile, is projected to increase, making adaptive reuse a must-have in any forward-looking real estate investor's arsenal.[1]

Adaptive reuse is not for the faint of heart and can often lead first-timers astray. Based on longtime experience in both new construction and adaptive reuse (and the school of hard knocks), this article outlines few key points for a financially successful adaptive reuse project:

PICK THE RIGHT LOCATION

Like all real estate, adaptive reuse is local. Is your project close to transit, groceries, bars, and restaurants? The good news is that most office buildings are close to other office buildings. Future residents might be able to walk to work, which is a huge lifestyle benefit, and saves both energy and money.

The hidden advantage of adaptive reuse is often an irreplaceable or high barrier-to-entry location. Well-located converted urban apartments can compete favorably with newer, more expensive high-rise construction, and they can hold their own against similarly priced stick-built garden apartments farther out of downtown areas, requiring a longer commute. Don't sell location short.

Suburban locations can also work well, provided they are desirable for young professionals, empty nesters, families, or others likely to become renters. Many suburban office buildings offer more height and views beyond what is available in local garden-style construction. That said, to make conversions work, people need to want to live in those places. A good rule of thumb is: if rents are high enough to support ground-up construction in the location, adaptive reuse should also be feasible. If nearby apartment buildings have more than a 95% occupancy rate, that's a great sign. But if they don't, take heed. Don't be seduced by the siren song of a great asset in a mediocre location.

ACHIEVE DENSITY WITH CREATIVE FLOOR PLANS AND UNIT MIX

It's no use applying cookie-cutter Class A apartment floorplans to office conversions. It won't work. Aria has spent a decade designing different units that work in deep floorplates, in order to generate enough density to make adaptive reuse work. At one of our office-to-residential conversions outside DC, the Highline Hyattsville, which we converted in partnership with The Bernstein Companies, we had to deal with football-field-sized floor plates. We collaborated with the architects to design innovative unit types, including alcove studios, "junior one-bedrooms," "junior two's," micro-units, and even the tastily named "strudel" unit. Opinion was divided as to whether these units would be a success. (P.S. The 24 "strudel" units sold out within weeks of the project opening.)

It's also important to recognize that in tight times, people often share apartments to save money. Thoughtfully designed roommate apartments—often considered co-living—can be a bargain for the tenant and a boon for the investor. That's because two people with two incomes can share a space marginally larger than a one bedroom, especially utilizing that deep floorplate. At The Bond apartments in DC, we took a floorplate of five one-bedrooms and four studios utilized as extended-stay hotel/dormitory for the International Monetary Fund, and converted it into four two-bedrooms, three one-bedrooms and three studios.

Our economical small two-bedrooms are designed to be shared and are very livable. After touring in person, people are often shocked to learn the actual square footage of the units. As my partner David Arditi has noted, not all square feet are created equal.

The market has spoken and these diverse unit types are a hit. Density is required to make the numbers work. The two go hand in hand. If you try to use conventional architecture here, you'll end up with 1,000 SF one-bedrooms and your pro forma on life support.

DON'T BE AFRAID OF UGLY

Do bay windows shaped like a supersonic airplane cockpit sound like a good idea? Yeah, it was the 1960's. Roll with it. Don't forget, people live in the inside of the building, not the outside. For the most part people will only look at the ground floor anyway. Pink marble elevators? Turn it into a retro design statement.

The truth is that many of the best candidates for office-to-residential conversion are obsolete buildings that aren't about to win any Architectural Digest awards. For every exquisite historic jewel box with perfect floorplates, there are a dozen leviathans from the 1960's. But for the right price, people will live in anything to get a prized location. So don't sweat the small stuff. Anything is convertible with the right design approach—at the right price.

Don't try to apply cookie-cutter Class A apartment floorplans to office conversions. It won't work. Aria has spent a decade designing different units that work in deep floorplates, in order to generate enough density to make adaptive reuse work.

DON'T OVERPAY

There is real risk associated with adaptive reuse and it's important to strategically mitigate this risk while seeking outsized returns. Chief among our risk-mitigation strategies is investing at a low basis, which provides a "margin of safety" in case costs run high or market conditions change.

It's important not to be fooled by a seemingly low price. While it is tempting to buy a twenty-story building for the price of a New York condo, the feasibility of a project is based on many detailed architectural factors, the number of exposures that have adequate light and air, and other factors. These factors combined with the construction costs will determine the price per pound of the building once renovated. That's what makes or breaks the deal; not the sticker price going in. Like good advice, as the old joke goes, in some cases the building costs nothing and is worth the price.

Adaptive reuse projects at the right price are most readily available through special situations. Illiquid assets may be often secured at a lower basis than a ready-made trophy asset because they're distressed, underperforming, or otherwise overlooked by the competition. Mind the basis, on the way in and on the way out. It'll make transforming an asset through adaptive reuse less risky and more rewarding.

WORK WITH GOVERNMENT AGENCIES FOR THE WIN-WIN

There are often a wide variety of incentive programs that are compatible with adaptive reuse. Environmental sustainability credentials (adaptive reuse is much more climate-friendly than ground-up construction), federal and state historic tax credit programs, or state and local affordability and tax abatement programs often combine to make the numbers work.

In Kansas City, our restoration and conversion of the former KC Athletic Club benefitted from historic tax credits which helped offset the cost of the construction work. The preservation guidelines overseen by the State Preservation Office do not come cheap, but in this case, they helped preserve a historic ballroom that adds character to the development and will bring wedding and event revenue. Adaptive reuse often fulfills goals for the municipality as well as the investor, so be on the lookout for a win-win with public agencies.

EXPLORE NONTRADITIONAL SOURCING AND PARTNERSHIPS

Often the most interesting adaptive reuse candidates are sourced through nontraditional relationships. These could be folks who have done it before, lenders or attorneys with insight, scrappy construction wizards, or just owners who see the potential for a conversion but want someone to do it with them.

Making these deals work is difficult because they bring together so many disciplines that don't always come together naturally—an eye for value, appreciation of history, a knack for floor plans, willingness to roll up your sleeves in construction, along with complex financial and legal structuring. Best to try it with seasoned hands; it gets easier each time.

BRING IT TO LIFE WITH AMENITIES

This is where the human touch is needed to bring an obsolete office building to life. Our 1960's office building was occupied since inception by the IRS. We took the glassy, former entryway and turned it into a Moroccan-inspired sunroom. During the COVID-19 pandemic, a young couple ended up getting married in it!

We took some of the extra deep space and made a lounge, gym, vintage-design rockstar room with musical equipment, co-working offices for WFH, and an "alone together" room based on the insight of the architect that people enjoyed doing solo work or schoolwork with others around for company.

You know you've succeeded when people who toiled in the building for 30+ years come into the new space and start looking around funny. They can't believe they're looking at the same soul-crushing office they've clocked into every day for decades—they think they've walked into the wrong building!

You know you've succeeded when people who toiled in the building for 30+ years come into the new space and start looking around funny. They can't believe they're looking at the same soul-crushing office they've clocked into every day for decades.

DISPELLING MYTHS

I hope to have dispelled some of the myths around adaptive reuse. Yes, it can be difficult, expensive, time-consuming, and a pain in the neck if you do it the wrong way. But it can also be very profitable when done right. To paraphrase (or should I say, "adaptively reuse?") Churchill's famous quip about democracy: adaptive reuse is the worst form of construction, except for all those others that have been tried in the course of time.

ABOUT THE AUTHOR

Joshua Benaim is Founder and CEO of Aria, an award-winning real estate company focused on next generation multifamily, value investment and special situations investing, and creative real estate development.

NOTE

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Adaptive reuse can be difficult, expensive, time-consuming, and a pain in the neck if you do it the wrong way. But it can also be very profitable when done right.

RENOVATE, REBRAND, REPOSITION

Robert Kilroy, CFA
Partner
The Dermot Company

Will McIntosh, PhD
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Affinius Capital

Multifamily properties with "good bones" may offer strong upside potential through renovation, rehabilitation, rebranding, and repositioning.

Thirty years ago, U.S. multifamily housing experienced a remarkable period of transformation. At that time in the 1990's, architects and developers targeted for improvement many of the characteristics that had previously relegated rental housing to second tier status relative to homeownership. Sound attenuation got better. Enhancements to community safety were incorporated. Energy conservation became a consideration. Nine-foot ceiling heights and higher became the standard. Clubhouse design and the range of onsite amenities saw dramatic improvement.

The base product became so much better that a high percentage of the communities built after 1990 share many critical characteristics with properties that developers are delivering today. But the older 1990's and 2000's properties have aged, generally rent for less than new product, and have fallen a step behind in terms of interior design, amenities, and energy conservation. Home properties with "good bones" nevertheless can offer strong upside potential through renovation, rehabilitation, rebranding, and repositioning.

The following shares best practices on revitalizing multifamily communities. The typical goal is to improve the selected property to (1) compete at a level slightly below brand-new communities and (2) to extend the effective life of the property. With focus, patience, and effective property management during the renovation process, experience indicates very significant upside risk-adjusted return potential.

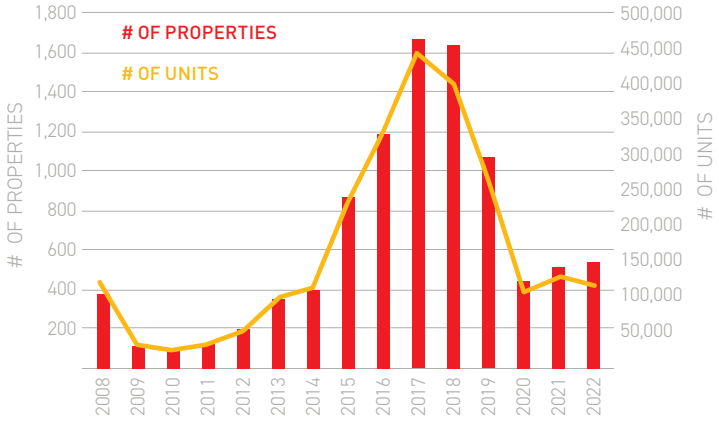
BACKGROUND ON MULTIFAMILY

In 2019, research by Bond, Shilling and Wurtzebach found that capital improvements lead to higher incomes for multifamily properties.[1] While not fully capitalized into market values, investors are fully compensated in terms of total return. They suggest that capital improvements are defensive and may outperform investment made in boom times. Additionally, Gosh and Petrova (2017), found that all forms of capital expenditures have a persistently strong relationship with cumulative returns.[2]

Based on RealPage Axiometric data since 2008, renovation activity peaked in 2017–18 and has been more muted since the pandemic. Nineteen percent of all properties in the Axiometric apartment database have been renovated over the past fifteen years *(Exhibit 1)*.

EXHIBIT 1: RENOVATION ACTIVITY INITIATED BY YEAR

Source: RealPage; Affinius Capital Research



THE RENOVATION OPPORTUNITY

For investors, the key questions to answer include (1) are the relative returns offered by multifamily renovation attractive? And (2) is there a large enough opportunity to capitalize? To address the latter, we examine recent renovation activity. Since 2008, across the major U.S. multifamily markets, RealPage has captured a large sample of renovation activity; 9,566 building renovations, comprising almost two-and-a-half million units.

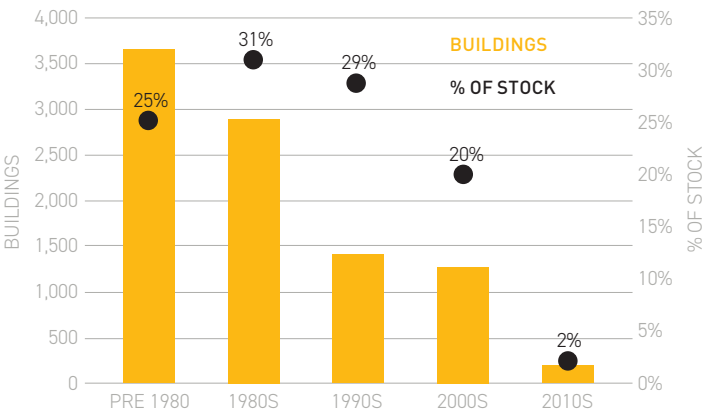
Exhibit 1 provides a detailed breakdown of these renovation activities by the year they commenced. Of note, just under 20% of all properties in the RealPage property database were renovated during this expansive 15-year period, which highlights the magnitude of the opportunity.

As discussed, the vast majority of the renovation activity took place on product that was older. *Exhibit 2* shows a breakout of renovated buildings by vintage–over 84% of all activity took place in buildings built before the 2000s, and 28% of the pre-2000 stock was renovated in the past fifteen years. However, a large portion of the older stock will likely require future upgrades to remain competitive and attract tenants, and it is likely that the post-2000 stock will also require increased attention to keep pace with amenities and tenant requirements.

Renovated buildings by vintage; over 84% of all activity took place in buildings built before the 2000s, and 28% of the pre-2000 stock was renovated in the past fifteen years.

EXHIBIT 2: RENOVATION ACTIVITY BY PROPERTY VINTAGE

Source: RealPage; Affinius Capital Research



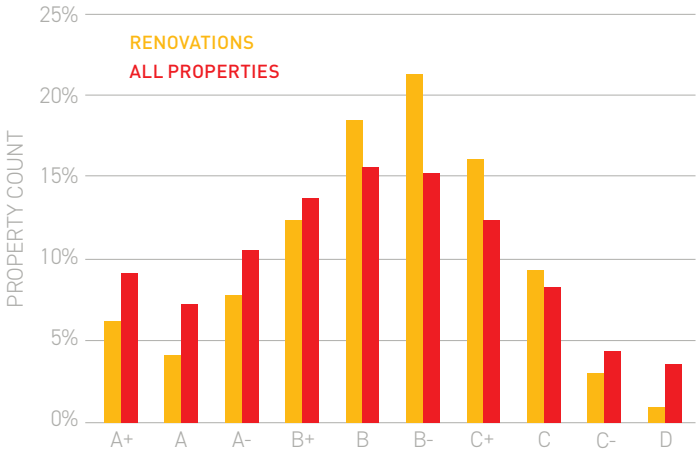
It is no surprise that renovations disproportionately occurred in Class B, B-, and C+ graded assets, as shown in *Exhibit 3*. These properties are likely strong candidates as they are not competing purely on affordability, as are perhaps assets lower in class, but have aspirations to move closer to Class A assets and increase rents. That said, it might surprise some readers the extent to which the renovation activity is occurring across all product types, even at the top of the market. This suggests assets of all sizes and vintages can benefit from capital expenditures, or at least require them to keep pace with the market.

Important to note is that the extent of building renovation varies widely. In some cases the changes may be more cosmetic, such as installing new countertops and stainless-steel appliances; in other situations a more substantial overhaul of amenities, shared public spaces, and even unit configurations may be required, and these can take longer and require more downtime for the units. *Exhibit 4* shows the distribution of renovation times for projects that have completed their renovation since 2008.

Exhibits 5 and 6 focus on the ability of owners to drive rent growth at renovated properties. As shown in *Exhibit 5*, over the fifteen-year horizon, rent growth during the renovation period has been strong, and the more substantial the renovation, the higher rents are likely to rise. We also capture the post-renovation period, two years after completion of the renovation, as this may be where some additional rent growth can be captured as the market realizes the increased competitiveness and quality of the asset.

EXHIBIT 3: RENOVATED PROPERTIES BY MARKET GRADE

Source: RealPage/Axiometrics; Affinius Capital Research



Renovation activity is occurring across all product types, even at the top of the market. This suggests assets of all sizes and vintages can benefit from capital expenditures, or at least require them to keep pace with the market.

EXHIBIT 4: RENOVATION DURATION

Source: RealPage/Axiometrics; Affinius Capital Research

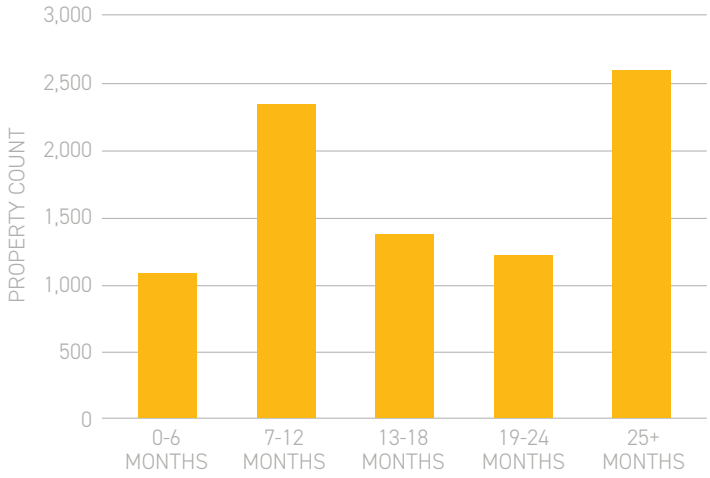
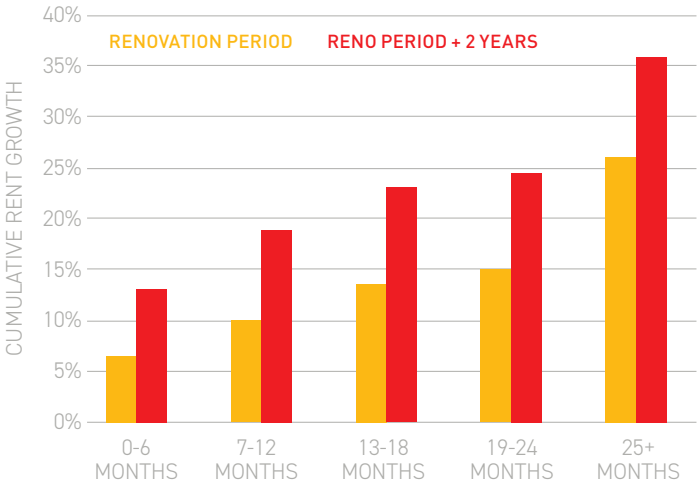


EXHIBIT 5: RENT GROWTH FOR RENOVATED PROPERTIES DURING THE RENOVATION PERIOD

Source: RealPage/Axiometrics; Affinius Capital Research



A more robust comparison of the relative success of a rehabilitation project would account for market rent growth during the timeframe. For example, if a renovated property saw rents increase 15%, but the overall market rents increased 20% during the period, an investor might be less inclined to consider the investment a success relative to if overall market rents had stayed flat. In *Exhibit 6*, we break out the renovations by property quality, and compare rent growth during the renovation period relative to overall market rent growth. The results suggest that lower quality assets see more rent growth when renovated relative to the market. This might be explained by a few factors:

- Lower-quality assets have more to gain from a renovation
- Class A renovations may be more targeted to keep pace with their peers, and/or be the result of a repair or other incident

Overall, data suggest the opportunity is sizeable, and finding the right assets can dramatically enhancethe financials.

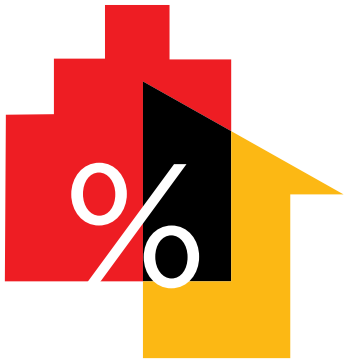
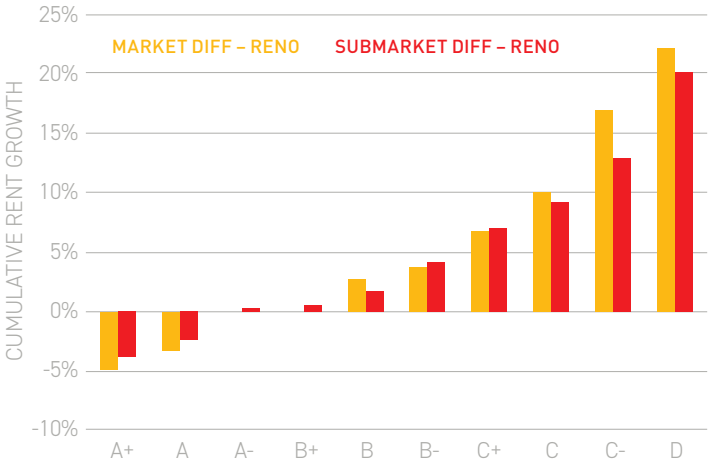


EXHIBIT 6: RENT GROWTH OF RENOVATED PROPERTIES VERSUS THE MARKET, BY CLASS, DURING THE RENOVATION PERIOD

Source: RealPage/Axiometrics; Affinius Capital Research



Defensive improvements are those for which ownership cannot typically generate immediate additional revenue.

TARGETS

A primary underlying consideration in acquiring properties to rehab is *location*. As the population has continued to grow and infill sites have become harder to find and much more expensive to acquire, the underlying value of the land on which many communities were built in the 1990's and 2000's has increased significantly. The popularity of infill locations among renters has only soared. A compelling location typically provides older communities with a strong competitive advantage even versus newer properties. A great location offers an attractive starting point for a renovation program.

Physical condition is another consideration. Properties of the vintage under discussion exhibit a wide range of deferred maintenance and capital expenditure exposures. An interesting way of thinking about these issues is to segregate improvement activities into two categories - defensive and offensive.

Generally, *defensive* improvements are those for which ownership cannot typically generate immediate additional revenue. For example, residents do not generally pay up for new roofs although they may improve the overall aesthetic appeal of the property. Similarly, tenants generally do not pay up for new or revitalized stairway systems. In most instances, though, to realize the property's maximum upside potential, the full range of building systems—roofs, stairs, gutters, windows, HVAC, water heaters—often must be addressed. While not a certainty, payback for addressing deferred maintenance and deferred capital expenditures occurs through realization of a lower terminal cap rate.

Otherwise, renovations and rehabs focus on *offensive* activities—those which really attract the attention of potential residents and for which they are willing to pay up. These activities are the ones which most in the industry think of in terms of renovation and include unit upgrades, clubhouse and amenity improvements, and potentially, added density.

EXHIBIT 7: POTENTIAL RESIDENCE UPGRADES

Source: Authors

POTENTIAL RESIDENE UPGRADES			
Full Cabinets	Switch plates	Tubs/Enclosures	Repaint
Custom closets	Appliances	Bathroom hardware	Countertops
Cabinet Faces	Keyless Entry	Shower Rods	Microwaves
Flooring	Vanities	Mirrors	Window Blinds
Lighting	Woodwork	Mirror surrounds	Shower Heads
Under cabinet lighting	Doors	Water heaters	Low Flow

Where generating additional rent is the name of the game in this part of the program, an experienced renovator will add renovation features until—at the margin—the last added feature delivers upside potential that just meets a hypothetical return on investment threshold. This calculation is more of an art than a science. Nevertheless, the idea is to add elements to the renovation until the overall return on investment slips to a certain target level.

For example, ownership may be able to upcharge by $100 per month or $1,200 per annum on a custom closet installation with a cost of $1,000, while up charging just $5 per month or $60 per year on an installation cost of $500 for hardwired under-cabinet lighting. Experienced renovators constantly assess what renters are seeking and willing to pay more for in their apartment homes, clubhouses and amenity offerings and they deliver accordingly.

When planning a community renovation, ownership assesses the ratio of defensive to offensive activities. While defensive upgrades are almost always part of the equation, obviously, a property with lower deferred maintenance and capital expenditure exposure is preferable; however, often to unlock a property's full upside potential, some defensive work must be undertaken.

In targeting high potential opportunities, acquirers also consider several aspects of *property management*. Assessing the performance of the incumbent firm is a starting point. A suboptimal performance provides additional upside potential; however, attributing the current level of performance to the team in place versus other shortfalls attributable to the property requires considerable skill and intensive analysis. Other considerations include real estate tax exposure and management, insurance cost and coverage, payroll sufficiency, and overall maintenance.

PURCHASING THE PROPERTY

The renovation, rehabilitation, repositioning process starts upon first inspection of the property. Acquisitions officers perform the standard analyses and immediately start to hypothesize about: (a) what can physically and effectively be accomplished; (b) how much it will cost; (c) the activities' upside potential; and (d) how long the activities will take?

EXHIBIT 8: PURCHASE PROCESS

Source: Authors

Given ever-shortening due diligence timeframes, developing an early on cost-benefit analysis in very short order is critical. The insights of property managers, interior designers, architects, landscape architects, contractors, and suppliers are important. Strong past relations with all potential participants in the renovation process is also necessary. Their participation and insight make significant difference in determining the ROI of the contemplated improvements. Even with their input, inflation and supply chain disruptions can have a dramatic impact upon the eventual outcome. Analysis should always include a large cost overrun contingency.

The process of analyzing the market and designing an overall post-renovation product at a reasonable price-value proposition is exacting. It entails developing a clear understanding of pricing at different levels of quality. Often, the strategy will be to deliver a living experience that is almost equal to but just slightly below that of the high-priced competitors.

During due diligence it is important to assess the potential of the existing resident base to pay up for the better product. A resident base that is stretching to pay current levels of rent is unlikely to renew at the higher rent payment levels needed to justify the renovation. Re-tenanting the property is not out of the question in most instances, though it does require a higher vacancy reserve during the renovation.

Leverage strategy also plays an important role in the purchase decision. While generally beyond the scope of this paper, how the property is leveraged and potentially re-leveraged can dramatically alter the risk profile of the renovation. An important part of the equation is how ownership will fund the renovation. Funding with equity is obviously the least risky means: the tradeoff is the lower returns implicit in de-leveraging.

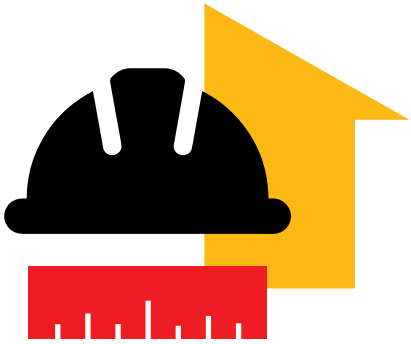
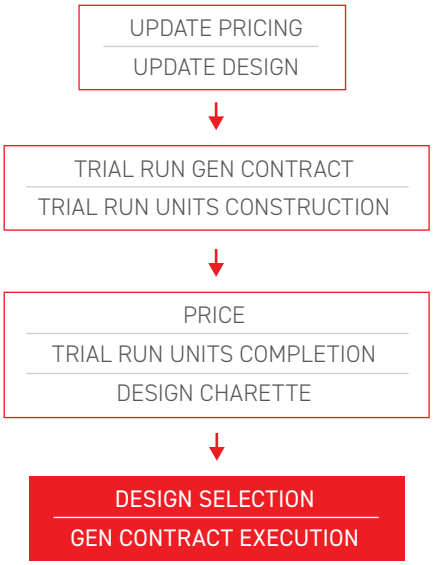


EXHIBIT 9: TESTING PROCESS

Source: Authors



Post-closing, the renovation process kicks into gear. Often ownership will set aside a period of six months or more to: (a) gain a complete understanding of property operations; (b) assess the resident base; and (c) plan the renovation program.

A primary risk-limiting approach is to "trial run" the unit renovation program. This consistently includes the design of three or more levels of finishes across a variety of unit types to assess: (a) market receptivity of the product; and (b) pricing (rental upside) potential. Performing a trial run is informative and helps manage risk. The feedback gained from the exercise is very helpful in setting the broader strategy. Design charettes—with the participation of ownership, investors, consultants, and vendors—are useful in determining the final unit designs.

Implicit in this analysis are two considerations worthy of further discussion.

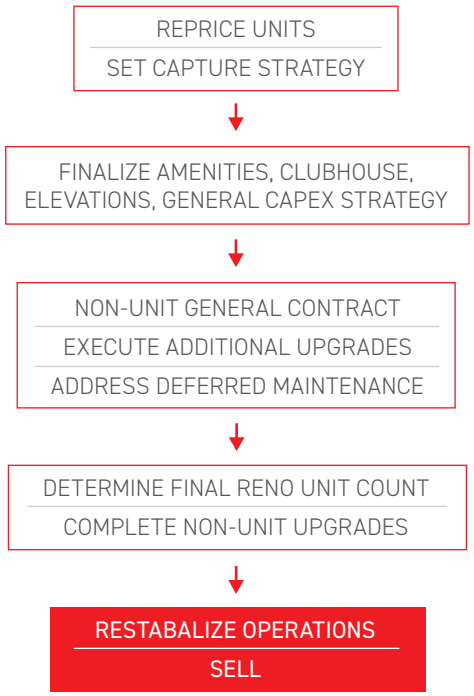
First, we outline a "go-first" approach with the unit renovation program. Often this is preferable as unit rents show the community's upside potential. Alternatively, proceeding, first, with a clubhouse renovation is certainly an option, but it's a bit trickier assessing the bottom-line impact of this approach and while the unit renovation program is alterable, major projects such as a clubhouse redo offer less flexibility.

Second, the approach outlined above assumes that the residences are captured for renovation as residents terminate their leases. Another means of renovating uses a building-by-building approach.

Buildings are de-leased and delivered to the general contractor without any residents living in the apartments. The primary benefit of this approach is that it shortens the overall renovation timeframe. The main drawback is that it is very difficult and often costly to capture all the units in each building simultaneously.

EXHIBIT 10: EXECUTION PROCESS

Source: Authors



With lessons learned from the trial run and design charette, ownership can make a go or no go decision on the broader program.

The owner may have a captive general contractor that executes the physical renovation. More often, however, ownership will contract with a third–party general contractor and proceed with the renovation under a guaranteed maximum price contract. Pricing is agreed to in advance at a fixed price subject to change orders. A frequently used contract is the AIA 101 form of contract tailored to meet the specific circumstances: It is typically paired with AIA 201 form that details the general conditions of the contract.

Ownership then needs to decide how wide a range of activities the contract or contracts will cover. One general contract may cover the full range of renovation activities or different contractors may perform different aspects of the work. Further, the owner may direct contract for parts of the renovation and may perform renovation work themselves if fully integrated.

Even under the one contract approach, ownership may have superior purchasing power and may contract directly with major supply houses such as Ferguson, Lowe's or HD Supply for all or parts of the renovation. Taking the materials component out of the general contract can lead to solid cost savings. How involved ownership is in the purchase process and self-performance varies widely depending on ownership's staffing levels and expertise.

Flexibility of contracting provides a significant benefit in terms of risk and reward. While experience suggests that the actual return to the renovation activity is highly consistent with (and often significantly exceeds) initial expectations, circumstances can necessitate substantially altering the renovation.

The strategy for each community differs in terms of scope and units involved. One approach has ownership completing a set number of residence renovations leaving a percentage for the next owner to complete. Alternatively, and especially when longer-term ownership is likely, the typical intent is to renovate all the apartments. When this is the case, it is important to structure the general contract to provide for an acceleration, deceleration, or termination of the program as circumstances warrant.

Professionally managing the resident base is an important key to achieving success with the renovation. Depending on the level of renovation, the sounds and activities of the renovation team can be problematic for the residents. Experienced property management can smooth this over. Also, while the range of upcharges will vary, selling the increases is often challenging especially at the higher end of renovation.

With heavier unit renovation programs where the accelerated timing of turning the renovations apartments is critical, capturing units to turn is important and often this means non-renewing residents - intensively toward the end of the process. The resident's disappointment at not being allowed to renew his or her lease is often mitigated by offering the displaced resident a newly renovated apartment with incentives such as free rent or a moving allowance.

Careful analysis of the pre-buy rent roll is important in determining the overall strategy. If the average in-place resident is already stressed to meet rent payments, a re-tenanting of the property is likely with significant vacancy implications.

Minimizing vacancy during renovation enhances the bottom line. Quick contractor turns and effective property management limits the downtime. Standard practice requires residents to provide 2-months' advance notice for renewal or departure. Assuming a larger community of, 300 residences, a retention ratio of 50%, and a target maximum number of units under renovation of fifteen at any one time, the supply of units for renovation is typically fine for the first twelve to fifteen months.

Throughout the term of the unit renovation program, rent pricing remains critical and provides a useful feedback loop. Initially, ownership sets rent premium expectations and each renovated apartment provides an important feedback loop datapoint that, in turn, can lead to plan modifications. Assuming the unit renovation program is achieving the desired level of premiums and returns on cost, ownership can then consider proceeding with the other components of the renovation: the clubhouse, amenities, defensive work, and rebranding. The clubhouse deserves special consideration.

CLUBHOUSES/AMENITIES

The potential residents' initial overall impression of the community is largely a product of what they find when they enter the property's clubhouse. We believe the upside potential of a substantial clubhouse upgrade is often overlooked. In some instances, a complete demolition of the facility may be warranted. Often, leaving the existing building and adding on to it can work. In many regards, clubhouse renovations parallel the unit renovation program; however, an important consideration is to program the improvements to augment the overall community appeal.

Clubhouses come in a wide variety of shapes and sizes based on the original development team's budget and hypothesis as to the role of the clubhouse in leasing and resident retention. Best practices include a thorough re-evaluation of the clubhouse and community amenities based on experience and the intensity of the unit redesign. Architects, engineers, and interior designers are important participants.

Addressing the carbon footprint of communities is a dramatically emerging trend in renovations.

EXHIBIT 11: POTENTIAL CLUBHOUSE AND AMENITIES UPGRADES

Source: Authors

POTENTIAL CLUBHOUSE/AMENITIES UPGRADES		
Furniture	Private Offices	Grilling Areas
Updated Leasing Offices	Kitchen	Landscaping
Lighting	New Televisions	Secure Mail Kiosks
Modern Bathrooms	Fitness Modernization	Flooring
Package Storage	Pool Improvements	Window Treatments
Pool Table/Ping Pong	Space Conversion	Enhanced Storage

ENERGY EFFICIENCY/GREEN/LOANS

Addressing the carbon footprint of communities is a dramatically emerging trend in renovations. Until recently, the primary challenge with "greening" communities has been that the associated activities have been costly and due primarily to the direct billing of residents, it has been challenging for owners to realize a return on investment.

This return on investment (ROI) challenge is now changing. The first and still emerging approach that facilitates an ownership financial return is through lender-provided green loan incentives. Overly simplified, the lender provides the loan on a reduced interest rate basis - in return ownership agrees to complete energy conserving property improvements. The list of qualifying improvements is significant and includes HVAC, water heaters, low flow toilets, faucets, and showerheads, window replacement, improved insulation, and solar, among several others.

HVAC replacement is the most promising energy conserving activity. Due to governments' ban on the production of Freon, the dwindling supply and increasing cost of refurbished Freon, and the increasing cost of maintaining older equipment, HVAC systems upgrades provide a moderate cost approach to improving communities' carbon footprints.

Again, it is difficult for ownership to immediately monetize a return to performing the improvements – other than through loan incentives; however, the likelihood of a buyer paying more for a property that has performed one or more of the capital upgrades is very high and can impact the operational and financial performance.

REBRANDING

Rebranding is often an important component of the process and will likely include signage replacement, a new website, and updated collateral leasing materials. The more intensive the renovation, the more likely a new "look" will help unlock leasing potential. Third-party designers, sign manufacturers, printers, and website designers all oversee parts of the upgrade.

SUCCESS

What does success with a multifamily renovation look like? The key metric is generating higher rents while keeping a lid on operating costs. This drives NOI. In addition, effective execution of the previously noted "defensive" activities should result in a lower residual cap rate than would be the case without the CapEx program.

A typical underwriting term for value-add is five years. Assuming a 300-unit community and a target average renovation term of fifteen units per month, the renovation, including a six-month planning cycle, will take a total of 16 months. Often it will take two turn cycles to realize the full upside potential of the renovation to realize the targeted return. The length of time for a full upside realization is often lengthened when the renovation is comprehensive, including potentially, clubhouse, elevation, landscape, and amenity improvements. With re-stabilization of the rent roll proving the value of the renovation, owners typically underwrite with an expected hold period of five years.

Assuming a standard 3% per annum market rental rate tail wind, renovation premiums that deliver a combined 12% ROI, and an initial cap rate of 4.5% to 5%, a base line expectation is, that post-renovation, the current return on cost will increase into the 6% to 6.5% range, and this will drive the 5-year XIRR up into the 14% to 17% range in the current climate. Note, also, that the level of "defensive" capex activities may significantly impact the final IRR.

ABOUT THE AUTHORS

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NOTES

[1] Bond, Shaun, James D. Shilling, and Charles Wurtzebach, Commercial Real Estate Market Property Level Capital Expenditures: An Options Analysis, Journal of Real Estate Finance and Economics, Vol. 59, No. 3, 2019.

[2] Petrova, Milena and Chinmoy Ghosh, The Impact of Capital Expenditures on Property Performance in Commercial Real Estate, Journal of Real Estate Finance and Economics, Vol. 55, No. 1, 2017.

Often it will take two turn cycles to realize the full upside potential of the renovation to realize the targeted return.

REVIEWER RESPONSE

The authors expertly lay out a comprehensive framework for understanding US multi-family renovation projects including many of the considerations that should be taken to enjoy the expected returns. Even for groups not embarking on directly with the work, this article can serve as a roadmap to help select a partner particularly for foreign investors who may not be as familiar with the American multi-family model.

The article suggests that it is possible that a template formula that can be applied anywhere in the US. There is no discussion of regional differences, or if a successful team in one part of the country can fully exploit their expertise elsewhere. Should a successful team stick to their region or is it possible to export their best practices and be profitable elsewhere in the country?

Further exploration could focus on the authors' observations about how remote work trends are changing the demands for the types of renovations that are more successful, in location, geography, product, or even services. Does the rise of hybrid work create entirely new opportunities? The article briefly touches upon property management without elaborating on the service aspect of project. Could enhancing or altering the scope of services increase rents with minimal capital expenditure?

Lastly, it would be helpful to consider if any jurisdictions in the US have regulations surrounding the process of "de-leasing". Even if there are no legal rent controls, do any jurisdictions regulate "de-leasing"? Other parts of the world can be very tenant friendly about this part of the process. In the absence of bylaws or regulations what are the best practices that could maximise reputational benefits (or at least minimize risks) in this regard?

– Peter Grey-Wolf
Vice President, Wealthcap
Member, Summit Journal Editorial Board

REDEFINING THE PROGRAM

Peter Grey-Wolf
Vice President
Wealthcap

During the pandemic, we learned how to do anything from anywhere—and how we defined building usage evolved in kind. So where do we go next?

Whether asked openly or spoken of in code, the big question facing the future of commercial real estate is: what happens to all those office buildings?

To think through this question from a perspective beyond the CRE bubble, AFIRE Board Member Peter Grey-Wolf recently spoke with David Theodore, Director of the Peter Guo-hua Fu School of Architecture at McGill University, who shared his thoughts on how our use of space has changed since COVID, some of the challenges we face going forward, and some opportunities that he sees in AI and building conversions.

Peter Grey-Wolf (PGW)

During the pandemic we learned how to do many things from anywhere. You can do yoga, groceries, and an office job all from home. This raises the question of how we define use of a building. Do we need to be broader about our definition of program?

David Theodore (DT)

From an educational point of view, we've been looking at "program" for a long time. It doesn't seem like it's at a turning point. For example, if you think of the kinds of buildings and projects that Office for Metropolitan Architecture (OMA) has produced, and the kind of people who have trained through OMA—a lot their work is about thinking about program in determining what a building might be. Those are often public and institutional buildings—museums, libraries, galleries and so on—where the program is already narrowed down to a certain degree.

People are still going to go to museums in a way that COVID hasn't changed. The programming changes that you're talking about are not necessarily in architectural driven sectors. They're more about city development, urban developments, and office buildings.

The people who are developing shopping malls and office buildings are not asking architects, "What should we do?" Do they want architects to be rethinking the program of shopping malls? I haven't encountered any developers who work like that—but they may be out there.

The main problem of getting somebody from the suburbs downtown to work is about the commuting. No matter how wonderful the building is, commuting covers a whole series of factors that aren't easily overcome. I have colleagues who take an hour and a half to get here each day. That's three hours of the day. I can walk here in 20 minutes, so I'm more likely than my colleagues to go to a restaurant after work, because they have an hour and a half trip ahead of them to get back home. That is not changed by the quality of the architecture downtown.

People prefer to be in the suburbs for all sorts of reasons, especially when it comes to having children. In North America, as soon as you have children, you cannot live downtown anymore. You have children and you move out of downtown, so downtowns don't have the characteristics that we like in European cities: a way of life where all classes of people, in all stages of life, are downtown.

Architects believe in walkable cities, with zones that don't require an hour-and-a-half commute. There is a library and a school and a grocery store and a place to work that's within walking distance. Part of that is an architectural problem. In Ontario and in Canada, there's this question of the "missing middle" in housing, where we have skyscrapers and single-family homes, but not the kind of developed housing that is normal in Europe. And part of that missing middle turns out to be the result of significant lobbying to get rid of that second exit stair. For example, we have the missing middle partly because of how insurance works for firefighters. It's not because we don't know how to build buildings with only one exit stair.

When it comes to programs, there's a whole host of problems that are non-architectural that need to be solved before the architects can get to work designing and building these "missing middles." It's not a lack of design quality that's holding it back.

PGW

Do you think there is a solution to the missing middle that uses the buildings that are now being underutilized, such as the office buildings or shopping malls with excessive vacancy?

DT

There's a lot of energy going into thinking of whether that's possible and how you might do it.

As an example, we still have about 250 unused churches in Quebec. We changed some into gyms and some into housing, some into cultural centres, and some into dance centres. But it turns out that it's very hard to turn these important civic buildings into something else.

There's not really a toolkit answer. Each project is a special case that requires a lot of thought and money. But I don't think that's a forever problem, there's enough people thinking about that that if you asked again in five years, there may be a clear answer: this is what you do in a shopping mall to turn it into a community. Why not? The experiments need to come from somewhere, but I've yet to see somebody willing to do something where they may lose money just so we can learn how to convert malls into housing.

Each project is a special case that requires a lot of thought and money. But I don't think that's a forever problem, there's enough people thinking about that that if you asked again in five years, there may be a clear answer: this is what you do in a shopping mall to turn it into a community.

PGW

Is there something that you see coming out of the COVID pandemic that will stay with us for the long-term—either rationally or irrationally?

DT

There's an optimism that we will pay more attention to air quality in buildings, which ties neatly into our concerns about our ecology, the environment, and climate change.

There is an understanding that came out of the pandemic that that you can improve air quality in buildings even if its not a cure for an illness. For example, consider tuberculosis from 1850 to 1950: if you had tuberculosis, the answer was architectural. You slept outside, perhaps on sun porches. But you used architecture to make sure you got sun and fresh air. That was the therapy for tuberculosis. Then came antibiotics, which were a thousand times more effective than sun and fresh air. So, architecture became less valuable in the equation of the health and safety.

For all those examples where architecture seemed to help with health issues, there are all these other scientific advancements that devalued the useful role of architecture.

There's a lot of sicknesses associated with the air in buildings—not just the transmission of disease. So, if you put that together with our concern for passive ventilation and fresh air, both of which arise out of our concern with ecology, addressing each of those technical attributes holistically, has us paying attention to the circulation of air in a much more forceful way than we do right now.

AI will likely be used to push the limits of even standard things. Why not? If I'm building 10,000 homes and I see a way to make myself 1% more profit, I'm going to do that—AI might help people to figure out what that might be.

PGW

The real estate industry has a decent handle on how to deal with carbon footprint and environmental impacts as part of the ESG mandates that many investors have. But we don't really have a good sense of how to fulfill the social mandates. How should the real estate industry should address these?

DT

A few years ago, I co-taught a studio for the first-year masters students. The premise was: do you know how to fit a building into an idea about what's going on in the city? The clear answer from the students was that we don't even want to know how to do that.

They really resisted trying to figure out what effect the design of the building would have on the profile of the street. They didn't think it was part of their job. But by the end of the studio, some of them really became interested in these considerations.

We worked with a promoter who was trying to develop in a socially conscious way. The students couldn't initially see what the actual problem was. You just have a bus lane: how does that affect the size of the building? I do think there is a part of education where the students are eager to understand how social considerations actually work in development, but the schools themselves need to change if we're going to actually take students along that journey.

PGW

Do you think that AI, virtual reality, or augmented reality will impact architecture? How can we use these technologies over the next five or ten years?

DT

AI, VR, and AR are going to affect how we both teach students and how they do their jobs in offices as professionals. AI can generate architectural possibilities much faster than a team of very creative people. The tools are very crude right now, but they are moving so quickly that, in three or four years, people will be able to do revolutionary things with design, structural analysis, and costing in new ways that are very cumbersome right now.

AI allows you to make things more precise. It's not just that you could get at an initial draft faster; it's that you can test important architectural questions. Can we make this cantilever longer, or make this building thinner or taller or offer more space? AI will likely be used to push the limits of even standard things. Why not? If I'm building 10,000 homes and I see a way to make myself 1% more profit, I'm going to do that—AI might help people to figure out what that might be.

PGW

Maybe optimistically we can use the AI to help us solve our problems of how to retrofit and reuse some of the underused buildings that we have?

DT

People who are interested in retrofit will be playing with AI to see if it can help. People are figuring out how to train the models and get better answers and it doesn't seem like there's an obvious end limit to where the technology is going. Imagine that you go to a big architecture or engineering firm and you track everybody's keystrokes as they use Revit for a year. And then at the end of that period you say, hey, I want a 14-story building—and AI will give you a realistic draft. Why wouldn't it?

Your other questions start to come in with people who have specific agendas. You put AI, rethinking ventilation, and affordable housing together in one project, it's very hard to predict what that could be. They are actual changes in thinking, that architecture could respond to to come up with new solutions and ideas.

For example, shopping mall retrofits that I've seen have so far been very, very, unimaginative. You really want somebody to come up with something that changes how we think. If it was easy, everybody would do it all the time. The answers so far are mundane and not yet able to convince people that such reprogramming is worthwhile. AI could be useful.

And what about putting a high school, inside a downtown skyscraper, for example? Why not? That wouldn't be the end of the transformation, but it might be enough to spark some new thinking. That would be a way to get people interested in thinking about it and experimenting. That's a very kind of "architecture school" way to think about it. The ideas are going to come—they need to. Because what is downtown San Francisco going to do, if they don't start doing some of this experimental thinking?

ABOUT THE AUTHORS

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David Theodore is Director and Canada Research Chair in Architecture, Health, and Computation at the Peter Guo-hua Fu School of Architecture, McGill University. His research has received support from the Graham Foundation, SSHRC, and the Pierre Elliott Trudeau Foundation. He has co-published on the history of healthcare architecture in the *IEEE Annals of the History of Computing, Social Science & Medicine,* and *Technology and Culture*. He has also contributed to design journals worldwide including *Canadian Architect, Frame, Harvard Design Magazine, JAE, Log,* and *the RIBA Journal*. Along with T B A he presented Impostor Cities as the official Canadian entry for the 17th International Architecture Exhibition of La Biennale di Venezia.

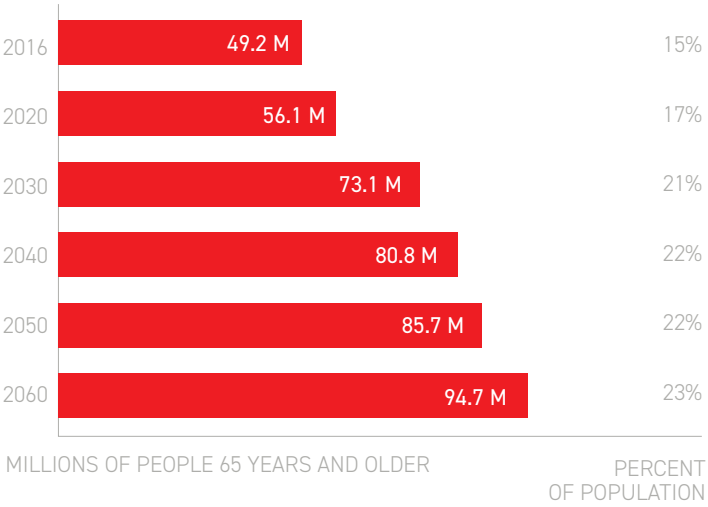
SPECIAL SECTION: TWO IDEAS FOR THE FUTURE OF SENIOR HOUSING

Benjamin van Loon
Editor-in-Chief, Summit Journal
AFIRE

As we inch closer to calendar year 2030, America is on the verge of a massive demographic evolution. By that point, all baby boomers will be older than 65, and within the following four or five years, older adults in the US will outnumber children for the first time in the nation's history.[1]

EXHIBIT 1: PROJECTIONS OF THE OLDER ADULT POPULATION: 2020 TO 2060

Source: U.S. Census Bureau, 2017 National Population Projections



This "gray wave" has massive implications for everything from shopping and schools to transportation and housing. And as with all sea change, the transformation of society served (and served by) a different demographic majority—senior citizens, in this case—will have its winners and its losers.

One of the commercial real estate categories potentially poised to "win" the gray wave is the senior housing—a typically niche, specialist real estate sector combining elements of multifamily, hospitality, and healthcare to increasingly stand on its own as an institutional asset class.[2]

Whether or not readers agree—and whether or not the demographic data is more complicated than it seems on the surface—this "winner's thesis" underscores the two think-pieces included in this special section of Summit Journal #13. Broadly, the authors featured here agree: America's demographic trends, and the economic fundamentals behind them, set up the senior housing sector for success.

Because the facts are the facts—America is aging—we can see a dogma forming around senior housing, especially as other institutional commercial real estate sectors, such as office and workforce housing, are under threat. We can't ignore the gray wave—but could the optimism for senior housing still be in its youth?

NOTES

[1] U.S. Census Bureau. 2020. "The Distribution of Household Income, 2019." U.S. Census Bureau, Washington, DC. https://www.census.gov/content/dam/Census/library/publications/2020/demo/p25-1144.pdf.

[2] JLL. 2023. "Investor Interest in Seniors Housing Remains Optimistic." JLL. https://www.us.jll.com/en/newsroom/investor-interest-in-seniors-housing-remains-optimistic (accessed July 25, 2023).

SENIOR HOUSING UPDATE

Robb Chapin
CEO & Co-CIO, Bridge Seniors Housing
Bridge Investment Group

Jack Robinson
Chief Economist & Head of Research
Bridge Investment Group

Andrew Ahmadi
Vice President, Client Solutions Group
Bridge Investment Group

Morgan Zollinger
Director, Head of Market Research
Bridge Investment Group

An upswing in occupancies and rents has taken root, and the key age demographic is on the precipice of what is anticipated to be unprecedented growth.

After nearly three years of pandemic-induced operational challenges, a rising cost environment, and uncertainty and a general lack of conviction in debt capital markets, the senior housing sector appears to be transitioning to an expansionary cycle that could last several years due to projected tailwinds. Expectations tilt to the upside. An upswing in occupancies and rents has taken root, and the key age demographic is on the precipice of what is anticipated to be unprecedented growth, even as construction activity has ratcheted back to a decade low.[1]

THE SENIOR HOUSING VALUE PROPOSITION

Before delving into the driving forces powering the sector's recovery, let's first explore the diverse range of housing options available to seniors.

While the spectrum of long-term care options ranges from active adult communities through skilled nursing facilities, where patients require particular medical attention, senior housing—for the purposes of this article—comprises independent living, assisted living, and memory care. These communities offer service- and care-enriched housing that allows residents to age in place and are for-rent and private pay, rather than government subsidized and large upfront buy-in fees.

While senior housing offers substantial cost savings relative to in-home care,[2] affordability is a crucial consideration in gauging the potential uplift to the sector overall. With monthly rents that typically range from $3,200 to $6,700,[3] senior housing tends to attract what we have termed the "mass affluent demographic cohort," with personal assets between $350,000 and $500,000. Private-pay senior housing residents typically rely on a combination of income sources such as retirement accounts, pensions, Social Security, and the liquidation of non-financial assets (i.e., financial asset spenddown) to access high-quality housing, which limits government reimbursement and rent collection risk.

Senior housing living offers residents the advantages of vibrant social engagement and round-the-clock support for self-care, medication management, wellness, meals, transportation, and housekeeping. Given that the asset class combines elements of community-based living, hospitality services, and healthcare, we see a direct link between resident satisfaction and asset performance. This means senior housing is an operationally intensive business where specialized operators who can fully meet nuanced individual resident needs are best positioned to deliver exceptional results.

EXHIBIT 1: SENIOR HOUSING SPECTRUM

Source: Bridge Investment Group

SERVICE FEATURES	INDEPEDENT LIVING	ASSISTED LIVING	MEMORY CARE
HOUSING	✓	✓	✓
SOCIAL ACTIVITIES & TRANSPORTATION	✓	✓	✓
HOUSEKEEPING	✓	✓	✓
MEALS	✓	✓	✓
SELF-CARE SUPPORT	✗	✓	✓
DEMENTIA & ALZHEIMER'S CARE	✗	✗	✓

EVOLUTION OF AN INDUSTRY: SENIOR HOUSING ON THE UPSWING

Because senior housing is needs-based, it has historically served as a counter-cyclical asset class by offering resilient performance through macro-cycles. The specific challenges of the recent pandemic, however, disproportionately affected the sector in terms of both demand and operations.

As safety concerns prompted strict regulations and moratoriums that clamped down on resident move-ins, the industry shed 9.2 percentage points in occupancies,[4] undercutting financial results even as front-line employees admirably worked to protect vulnerable resident populations.

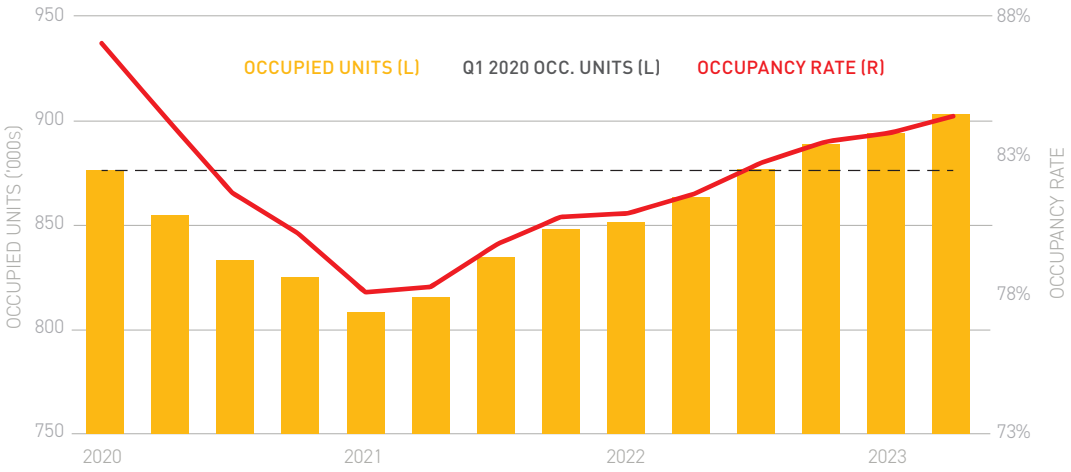
As of mid-2023, however, the sector has staged a remarkable turnaround. Market observers may look to a meaningful recovery in fundamentals that has taken root as the pace of resident move-ins has substantially stepped up compared to 2020's subdued levels, while net absorption has carried into positive territory for eight consecutive quarters at double the pre-pandemic average.[5] Occupancy rates are up 6.3 percentage points since 2021 and now stand only 2.6 percentage points short of full recovery.[6] On an absolute basis, the number of occupied units has already rebounded past the previous peak and continues to climb.[7]

These incremental demand gains appear to be poised to accelerate revenue creation and accretive rent growth. Senior housing rents experienced challenges throughout the pandemic, but we have observed steady gains over the past several quarters, more recently establishing a new high of 5.7% YOY with regard to effective rent growth as of Q2 2023.[8]

Senior housing rents experienced challenges throughout the pandemic, but we have observed steady gains over the past several quarters.

EXHIBIT 2: SENIOR HOUSING OCCUPANCIES[9]

Source: NIC MAP, as of Q2 2023.



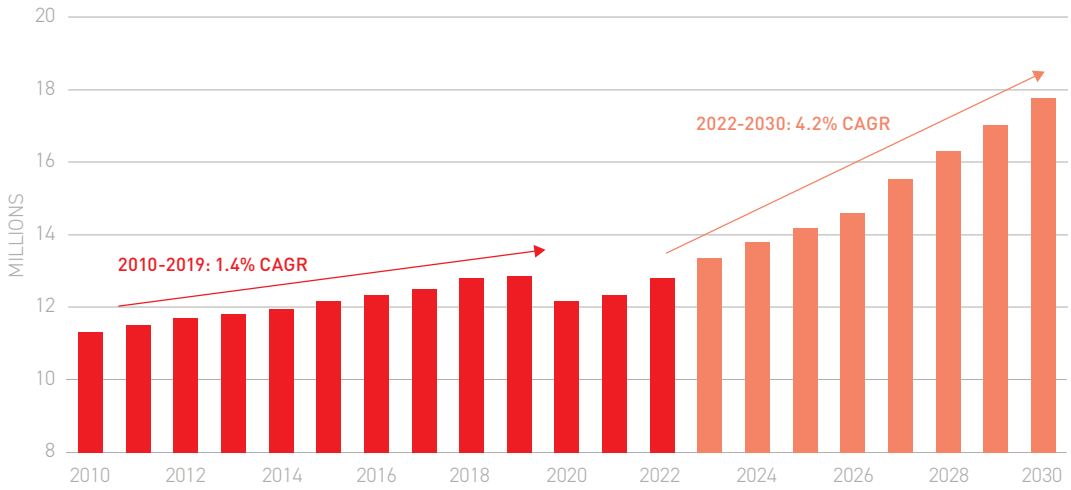
ACCELERATING TAILWINDS FUELING DEMAND

With pandemic disruptions in the rearview mirror, a leading headline in the sector's recovery is what we have termed the "Aging Avalanche," which is the incoming surge in the 80+ population cohort that is setting the table for what we believe will be protracted demand gains. The Aging Avalanche has been discussed at length, and as the crest of a demographic swell arrives, we see two distinct waves of population-driven demand providing meaningful tailwinds.[10]

The first wave of the Aging Avalanche is already in motion as the 80+ population is projected to expand by a record-breaking 561,000 people in 2023—more than double the typical annual increase compared to the past ten years and well in excess of prior population growth rates.[11] A second, even larger cohort is projected to rise in 2027 when the 80+ ranks will begin to accelerate by 800,000 people per year, foreshadowing several years of pronounced demand growth potential, leading to a 39% increase in the prime senior housing demographic.[12]

EXHIBIT 3: CHART: ACCELERATING 80+ POPULATION GROWTH FUELING SENIOR HOUSING DEMAND[13]

Source: Moody's Analytics, Baseline Scenario, as of June 2023.



Another touchstone in the sector's outlook is the notable increase in purchasing power among seniors, who are wealthier than ever before, creating a broader potential pool of renters. Since 2019, seniors aged 70 years and older have witnessed a remarkable 29% increase in household net worth, representing an aggregate gain of $9.1 trillion[14] that was fueled in great part by a jump in home values during the pandemic. Additionally, a rise in both the number and the share of retirees with high incomes (i.e., $100,000+ annually) suggests a higher ceiling for pricing power along a longer time horizon.[15]

EXHIBIT 4: AGGREGATE NET WORTH OF 70+ COHORT[16]

Source: Federal Reserve, as of Q1 2023.

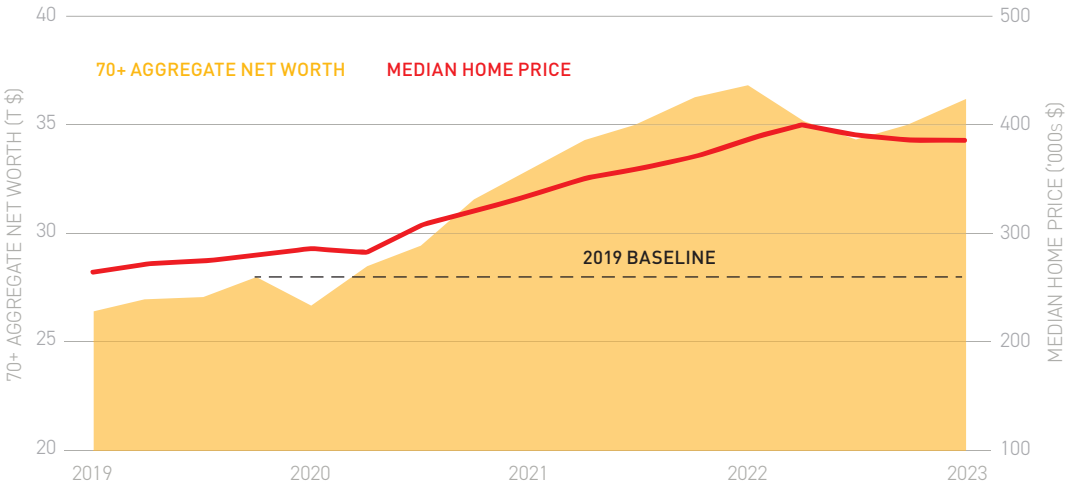
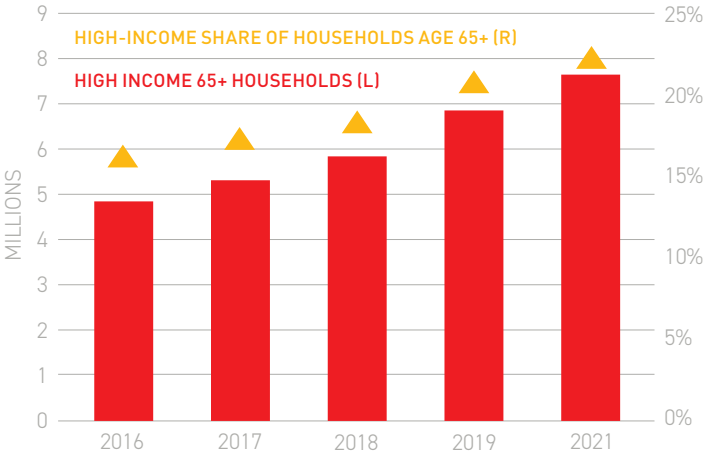


EXHIBIT 5: HIGH-INCOME ($100,000+) HOUSEHOLDS OVER 65[17]

Source: U.S. Census Bureau, American Community Survey, 2016-2021.

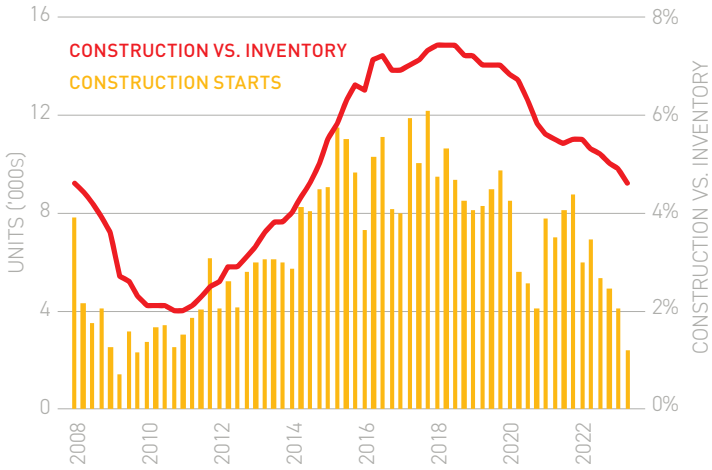


RATE HIKES LIKELY TO MUTE SUPPLY AND CATALYZE TRANSACTION ACTIVITY FOR HIGH-QUALITY ASSETS

Even as demand tailwinds accelerate, hardening debt markets have forced developers to throttle back, marking a stark reversal from the runup to the pandemic when deliveries overshot the market. Senior housing construction starts are down 80% since the 2017 peak, registering at a decade low of 2,400 units nationwide, and the number of units under construction as a share of existing inventory is now at the lowest level since 2014.[18] Taken together, these leading indicators are indicative of muted supply growth through at least the next 24 months, and potentially longer if conventional lenders remain largely sidelined for new construction.

EXHIBIT 6: SENIOR HOUSING CONSTRUCTION STARTS AT AN EIGHT-YEAR LOW[19]

Source: NIC MAP, as of Q2 2023.



Elevated volatility in debt markets is also reshuffling the investment landscape and could open the door to forced sales of high-quality assets, potentially creating openings for opportunistic buyers with sharp pencils. Between 2023 and 2025, 860 senior housing loans will come due,[20] and borrowers are likely to encounter capital stack stress amid a stricter lending environment that has seen loan-to-value (LTV) ratios retreat.

Further expanding the opportunity set of high-quality investments, private equity funds own ~$12 billion of senior housing assets that are approaching the end of typical asset hold periods, which will likely lead asset managers to consider strategic sales of such assets.[21] At the other end of the investor spectrum, small-scale investors that represent 40% of sector deal flow[22] are often poorly capitalized, raise equity on a deal-by-deal basis, and may also be forced to exit investments upon loan maturity as the current debt capital environment is not accretive for short-term extensions.

Elevated volatility in debt markets is also reshuffling the investment landscape and could open the door to forced sales of high-quality assets, potentially creating openings for opportunistic buyers with sharp pencils.Between 2023 and 2025, 860 senior housing loans will come due.

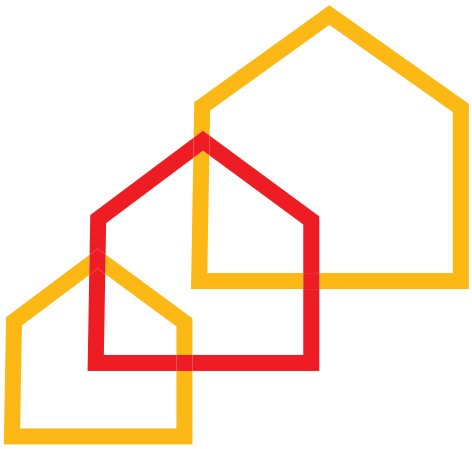
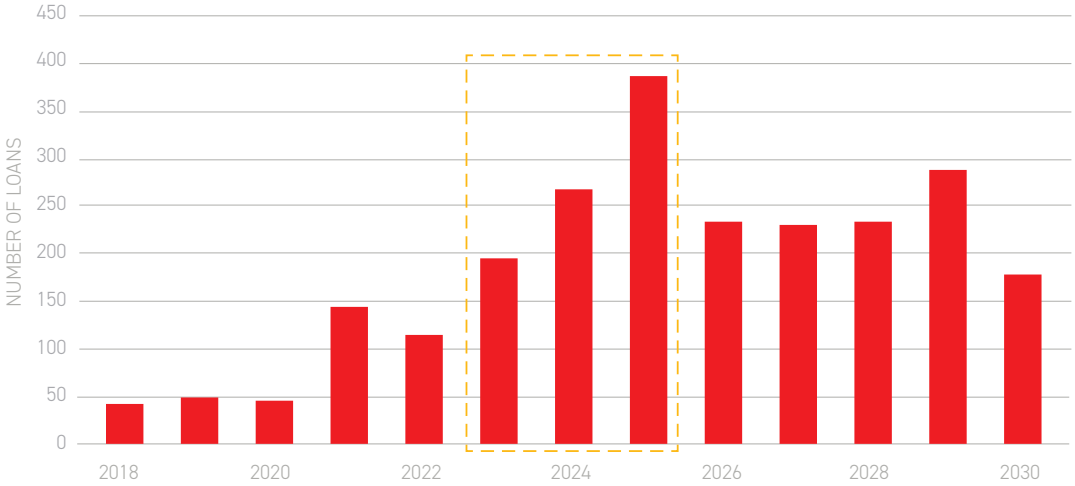


EXHIBIT 7: SENIOR HOUSING TO SEE A WAVE OF LOAN MATURITIES IN 2023-2025[23]

Source: MSCI Real Capital Analytics, as of June 2023.



EXPECTATIONS TRENDING UPWARD

Fundamentals are creating tangible tailwinds, and projections continue to trend upward just as the Aging Avalanche begins swelling the ranks of the prime senior housing demographic cohort and boosting demand. At the same time, the recent central bank rate hike cycle is undercutting development activity to the lowest levels in years and is likely to result in an uptick in sales of assets with attractive operations but misaligned capital stacks.

With many of the challenges of the pandemic now in the rearview mirror, the senior housing sector is primed for a new phase of expanded opportunity.

ABOUT THE AUTHORS

Robb Chapin is CEO & Co-CIO of Bridge Seniors Housing, Jack Robinson is Chief Economist & Head of Research, Andrew Ahmadi is Vice President in the Client Solutions Group, and Morgan Zollinger is Director, Head of Market Research, for Bridge Investment Group.

NOTES

[1] NIC MAP, as of Q2 2023. Moody's Analytics, Baseline Scenario, as of June 2023.

[2] Genworth, Cost of Care Survey.

[3] NIC Investment Guide: Investing in Seniors Housing & Care Properties, 6th Edition.

[4] NIC MAP, as of Q2 2023.

[5] NIC MAP, as of Q2 2023.

[6] NIC MAP, as of Q2 2023.

[7] NIC MAP, as of Q2 2023.

[8] NIC MAP, as of Q2 2023.

[9] NIC MAP, as of Q2 2023.

[10] Moody's Analytics, Baseline Scenario, as of June 2023.

[11] Moody's Analytics, Baseline Scenario, as of June 2023.

[12] Moody's Analytics, Baseline Scenario, as of June 2023.

[13] Moody's Analytics, Baseline Scenario, as of June 2023.

[14] Board of Governors of the Federal Reserve System, Distributional Financial Accounts, as of Q1 2023.

[15] U.S. Census Bureau, American Community Survey One-Year Estimates: Table B19037, 2016-2021. 2020 data unavailable due to Census survey difficulties during the pandemic.

[16] Board of Governors of the Federal Reserve System, Distributional Financial Accounts, as of Q4 2022.

[17] U.S. Census Bureau, American Community Survey One-Year Estimates: Table B19037, 2016-2021. 2020 data unavailable due to Census survey difficulties during the pandemic.

[18] NIC MAP, as of Q2 2023.

[19] NIC MAP Data and Analysis Service, as of Q2 2023.

[20] MSCI Real Capital Analytics, as of June 30, 2023. Includes assets and portfolios valued at $2.5 million and greater.

[21] Preqin, as of Q2 2023

[22] MSCI Real Capital Analytics, as of June 30, 2023. Includes assets and portfolios valued at $2.5 million and greater.

[23] MSCI Real Capital Analytics, as of June 30, 2023. Includes assets and portfolios valued at $2.5 million and greater

Fundamentals are creating tangible tailwinds, and projections continue to trend upward just as the Aging Avalanche begins swelling the ranks of the prime senior housing demographic cohort and boosting demand.

SENIOR HOUSING UPDATE

Tom Errath
Managing Director, Head of Research
Harrison Street

Near-term fundamentals are poised to produce substantial margin expansion in the senior housing sector, presenting an exciting opportunity for investors looking to gain exposure.

The senior housing sector is expected to experience a significant surge in demand over the next decade, driven by the unprecedented acceleration of the 80+ population. The aging demographic, which is projected to increase by 4.2 million individuals by 2029 as the Silent Generation (people born from 1928 to 1945) and Baby Boomers (people born from 1946 to 1965) enter the prime age range for senior housing (80+ years old).

This powerful demographic wave positions the sector for remarkable growth and indicates an average annual demand of approximately 40,000 units.[1] Historical construction starts over the last five and ten years have been approximately 30,000 and ~2,000 units, respectively, representing a 33% increase in unit production needed to meet increasing demand.[2]

The strong demand for senior housing is already reflected in rising occupancy rates and record-breaking revenue growth for private and public senior housing owners. Furthermore, the scarcity of aging-ready homes suggests that aging in place will be challenging, further bolstering the demand for senior housing. At the same time, with the forecasted growth of the 80+ population extending beyond 2029, the sector shows promising potential for continued demand longer-term. Near-term fundamentals are likely poised to produce substantial margin expansion, presenting an exciting opportunity to gain exposure to the sector.

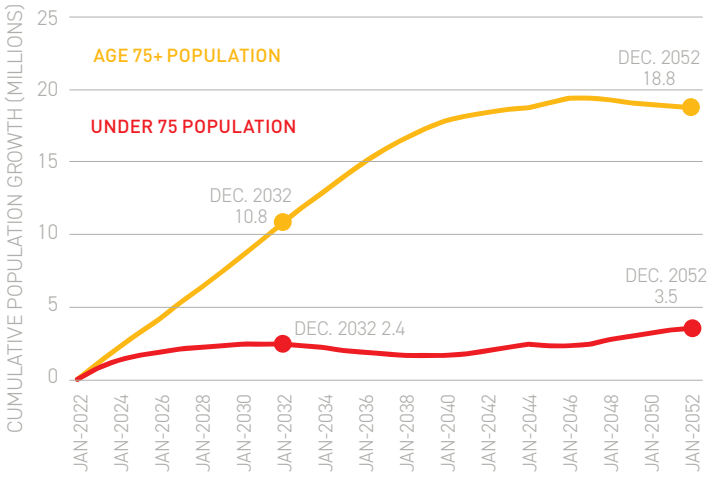
DEMAND OPPORTUNITY FROM UNPRECEDENTED ACCELERATION OF 80+ POPULATION THROUGH 2029

Senior housing demand fundamentals are strong and are poised to accelerate through the end of the decade, driven by the aging of the Silent Generation and Baby Boomers.

With entry into senior housing communities occurring at the average age of 82, the growth of the 80+ population is a valuable metric to forecast demand trends for the sector. Over the next seven years, the 80+ population is forecast to grow by 4.27 million individuals, from 12.97 million as of 2022 to 17.24 million (approximately 600,000 per year through 2029), as shown in *Exhibit 1*.[3]

EXHIBIT 1: THE AGING BABY BOOM (2022–2052)

Source: Moody's Analytics. Data as of March 30, 2023

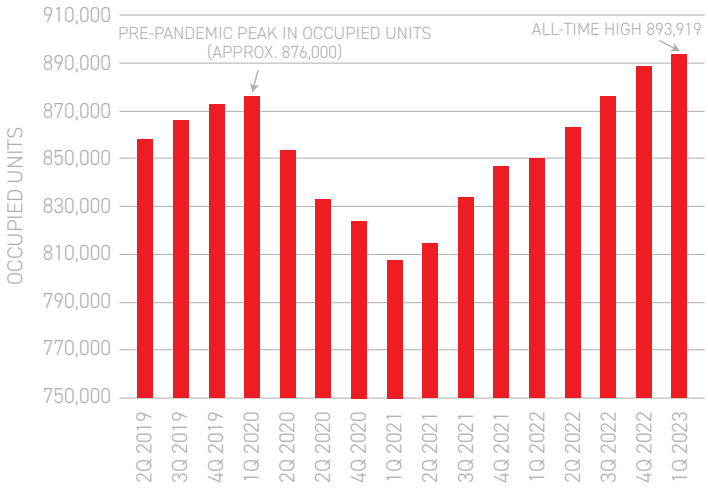


By comparison, the 80+ population grew by 610,000 individuals from 12.1 million to 12.8 million over the prior seven-year period from 2015 to 2022.[4] Based on historical senior housing utilization rates, 4.2 million cumulative population growth among the 80+ population implies average annual demand of roughly 40,000 units annually, equivalent to roughly 325 new communities, through 2029.[5]

Indeed, in 2022, demand for senior housing units nationally exceeded 42,000, more than any year on record, lifting national occupancy by 2.8% and bringing total occupied units to an all-time high, as shown in *Exhibit* 2.[6] Moreover, strong demand coincided with robust rent growth in senior housing, evidenced by average annual revenue growth of high-single-digit to low double-digit annual revenue growth among public and private operators.

EXHIBIT 2: ALL-TIME HIGH IN OCCUPIED UNITS

Source: NIC MAP



While it is possible that the senior housing utilization rate among the 80+ population will fall in future years, Harrison Street Research indicates such a decline is unlikely given the difficulty for individuals to age in place. Notably, less than 10% of US homes were aging-ready.[7] Beyond 2029, the 80+ population is forecast to grow by another 10.6 million individuals from 2030 to 2050, underscoring the potential for the aging population to provide favorable demand tailwinds well through the end of the decade.[8] The short- and intermediate-term operating fundamentals should benefit from low and declining supply activity due to challenging capital market conditions, irrespective of demand drivers.

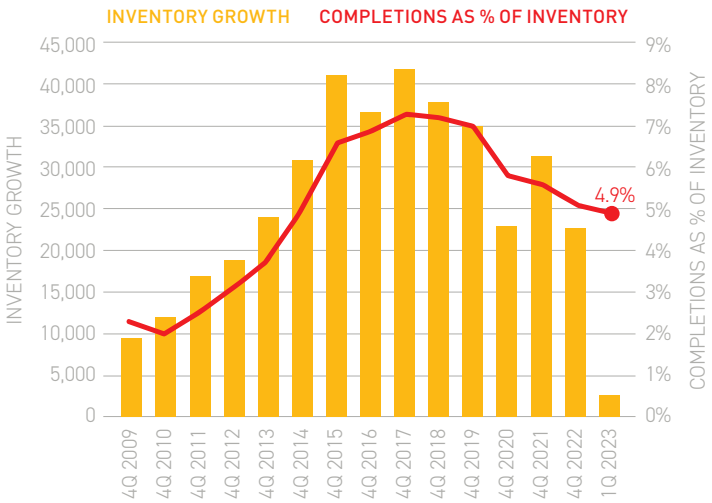
Beyond 2029, the 80+ population is forecast to grow by another 10.6 million individuals from 2030 to 2050.

SUPPLY GROWTH RESTRAINED BY CAPITAL MARKETS, NOT FUNDAMENTALS, BENEFITTING MARGIN GROWTH

Despite the favorable demand outlook for the sector, senior housing inventory growth slowed significantly since deliveries peaked at 7.3% of existing stock in 2017 to 4.9% as of Q1 2023, as shown in *Exhibit 3*.

EXHIBIT 3: ALL-TIME HIGH IN OCCUPIED UNITS

Source: NIC MAP

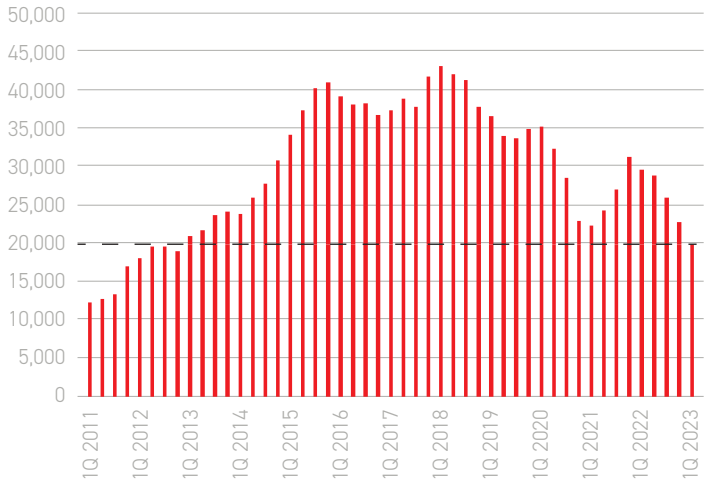


The trend is likely to continue in the short term.[9] Because senior housing deliveries typically lag construction starts by roughly two years, changes to the level of construction starts are leading indicators of supply growth. As of Q1 2023, high borrowing costs, elevated goods and services inflation, and volatility in the banking sector contributed to the number of senior housing starts falling to 3,100 units, shown in *Exhibit 4*, the lowest level since 2012.[10] As a result of historically low construction starts and an aging population, Harrison Street believes the supply-demand imbalance within senior housing is poised to favor established, quality operators in the short- to intermediate-term or until the capital market thaws which could ease development challenges.

Solid demand and low supply growth amid normalizing labor costs produce enviable operating margin expansion across the industry.

EXHIBIT 4: ALL-TIME HIGH IN OCCUPIED UNITS

Source: NIC MAP



OPERATING FUNDAMENTALS RESILIENT TO ECONOMIC CONDITIONS

Solid demand and low supply growth amid normalizing labor costs produce enviable operating margin expansion across the industry. For example, in Q1 2023, private market operators and public REITs reported strong occupancy and revenue growth year over year, marking the fifth consecutive quarter of double-digit revenue growth within same-store senior housing operating portfolios.[11]

Labor costs, which typically range from 55% to 65% of senior housing operating expenses, peaked in the first half of 2022 amid the labor shortage within healthcare broadly, and continued to moderate in Q1 2023, providing relief to senior housing operators. Examples of less temp labor usage can be observed in commentary from various publicly traded companies, including healthcare temp staffing companies, hospitals, senior housing REITs, and Harrison Street's own portfolio.

Record rental rate growth and slowing labor expense growth are on track to produce enviable same-store net operating margin expansion in 2023. The Green Street 2023 sector outlook research report noted a base case for NOI growth of 19% per year from 2023 through 2025. Public and private market valuations reflect resilient senior housing sector operating fundamentals.[12]

PUBLIC AND PRIVATE MARKET VALUATIONS REFLECT FUNDAMENTALS

Since the S&P 500 Index bottomed from mid-October through June 2023, the senior housing sector REITs returned 31.5%, compared to 23% for the S&P 500 Index and 7% for the FTSE NAREIT Index.[13] According to Green Street, nominal cap rates for senior housing fell 10BPS year-over-year in Q1 2023, the only sector to experience cap rate compression among traditional and alternative real estate sectors in their universe. While senior housing nominal cap rates may widen in 2023, given challenging capital market conditions, Harrison Street believes the sector fundamentals are favorable and should provide downside protection relative to other real estate sectors.

POSITIONED FOR PERFORMANCE

The senior housing sector is experiencing a supply-demand imbalance that favors quality operators in the short- to intermediate-term. While the demand for senior housing is expected to surge, supply growth has been restrained due to challenging capital market conditions. The slowdown in senior housing deliveries and low construction starts underscore the advantage for established operators. Operating fundamentals in the sector remain resilient, driven by solid demand and limited supply growth. Labor costs, a significant expense for senior housing operators, have moderated, providing relief and contributing to enviable operating margin expansion. Record rental rate growth and slowing labor expenses position the sector for impressive net operating margin expansion in 2023. These favorable operating fundamentals are reflected in the strong performance of the senior housing sector in both public and private markets.

Since the S&P 500 Index bottomed from mid-October through June 2023, the senior housing sector REITs returned 31.5%, compared to 23% for the S&P 500 Index and 7% for the FTSE NAREIT Index.

ABOUT THE AUTHOR

Tom Errath is Managing Director and Head of Research at Harrison Street, a leading investment management firm exclusively focused on alternative real assets.

NOTES

[1] The 40,000 annual unit demand projection is based on the pre-pandemic seniors housing utilization rate among the 80+ US population, according to data from NIC MAP

[2] NIC MAP

[3] Moody's Analytics

[4] Moody's Analytics

[5] Harrison Street Research

[6] NIC MAP

[7] US Department of Health and Human Services, National Institutes of Health, National Institute on Aging. Aging-ready home is a housing unit with a step-free entryway, a bedroom and full bathroom on the first floor, and at least one-bathroom accessible feature.

[8] Moody's Analytics

[9] NIC MAP

[10] NIC MAP

[11] Welltower corporate financials

[12] Corporate financials

[13] Bloomberg

While the demand for senior housing is expected to surge, supply growth has been restrained due to challenging capital market conditions.

REVIEWER RESPONSE

Both pieces in this senior housing section manage to make clear the mathematical demographic case for senior housing – and in absolute figures, the numbers are quite compelling, with Errath noting that in the next six years, the elderly population is projected to increase by 4.2 million as the Silent Generation and front end of the Baby Boomer generation reaches the 80+ threshold. That's nothing for future-focused real estate investors to sneeze at!

While it's true that the size of this population wave is generally unprecedented as it relates to correspondingly real estate opportunities here in the U.S. (perhaps with the exception of the much-anticipated apartment demand stemming from the coming-of-age of the Millennial generation), investors considering this asset class would do well to consider what portion of this cohort may never be within reach of institutional senior housing by virtue of high price points, as well as what percentage may elect for other, less-institutional alternatives as they age (such as aging in place or opting for multi-generational living schemes with children). Suffice to say, the true pool of potential tenants is considerably smaller than the estimated 17 million people that will be 80+ by 2029.

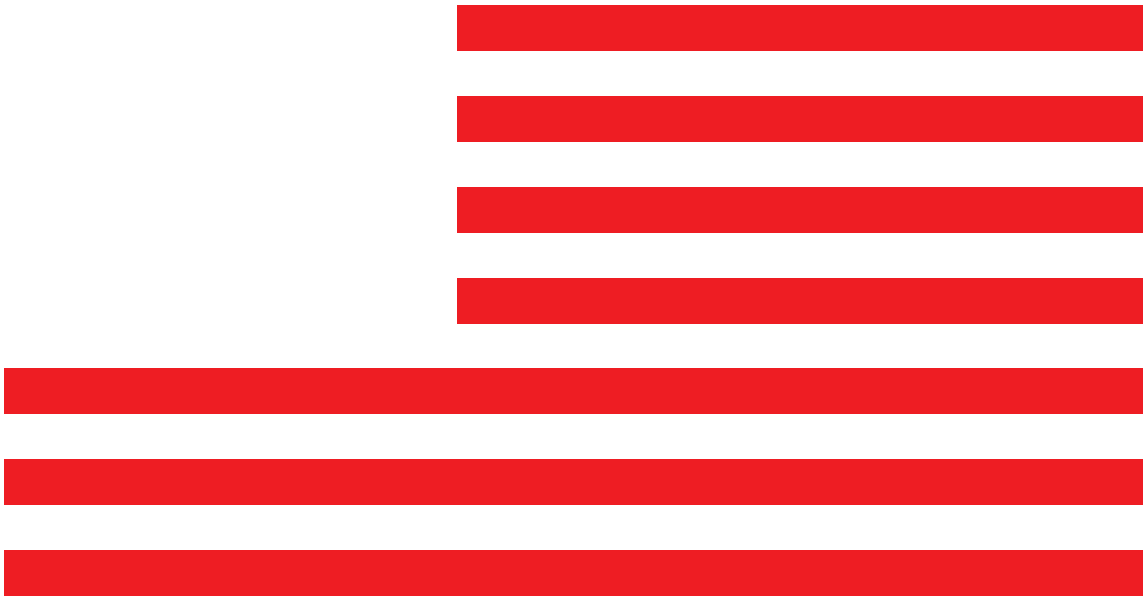
Cost is a huge consideration and downside limiting factor – according to Green Street's 2023 U.S. Senior Housing Outlook, the average cost of an independent living facility for a resident is ~$3,700, while the average monthly memory care stay runs $7,400 or more. This is considerably higher than the average monthly mortgage across both the Silent Generation and Baby Boomer cohorts, which stand at +/- $1,400 according to the National Association of Realtors' 2023 Home Buyers and Sellers Generational Trends Report. While home equity is a considerable nest egg from which these cohorts can tap to bridge the gap, absent medical necessity, many have stated their desire to age in place. A 2021 survey conducted by AARP showed that 77% of adults aged 50 and older want to remain in their homes for the long term – a number that has been consistent for more than a decade.

The reality is, though people are living longer, they are generally living more healthily, which enables them to stay in their homes longer and delay or forego moving into care facilities. There is also a growing aptitude for home health, which was accelerated by the pandemic as more care providers are offering telehealth services, all of which could dampen future demand. Though current housing may need to be modified to accommodate aging (stepless entryways, bedroom/bathroom on main floor, added accessibility), for many a home equity line of credit to renovate may be a more appealing and cost-effective option.

So while yes, there will undoubtedly be opportunities for investors in the coming decade to capitalize on the graying of the U.S. population, a nuanced approach to longer-term supply exposure, demand erosion and price point are essential.

– Sabrina Unger
Managing Director, Head of Research and Strategy, American Realty Advisors
Member, Summit Journal Editorial Board

HOLIDAY FROM HISTORY



Charlie Smith
Managing Director, Geopolitical Strategy
Newmark Global Consulting

The leading political and economic position of the US is currently under threat by global competition, but key trends in demography and innovation could change the equation.

The US has held a favored global political and economic position for the past 30 years—but international competition is getting tougher and threatening this status. Changing political and economic expectations can provoke uncertainties about a path forward and how the US can thrive.

Yet, if we take a moment to step back and examine long-term trends, there is cause for optimism around the US economy and its place in the world. This article looks at three key areas that underline US economic optimism: (1) demographics, (2) innovation trends, and (3) the relative position of the US and global competition.

TANGIBLE TAILWINDS

Unlike most other advanced economies, the US population will continue to grow for years to come. The US government projects that today's population of 336 million will increase by 11% in the next 30 years, reaching 373 million people.[1] In contrast to past decades, this growth will largely come from immigration rather than domestic birth rates, especially as millennials age out of their peak child-bearing years in the 2030s.

The US has continued to accept a steady stream of new residents in recent years which, in turn, has added economic benefits. Immigrant populations are more likely to start new businesses than native-born Americans.[2] They are more mobile, providing the ability to move where labor is most needed. They also have a higher rate of labor force participation, amplified by the fact that nearly 80% of the foreign-born population is of working age.[3]

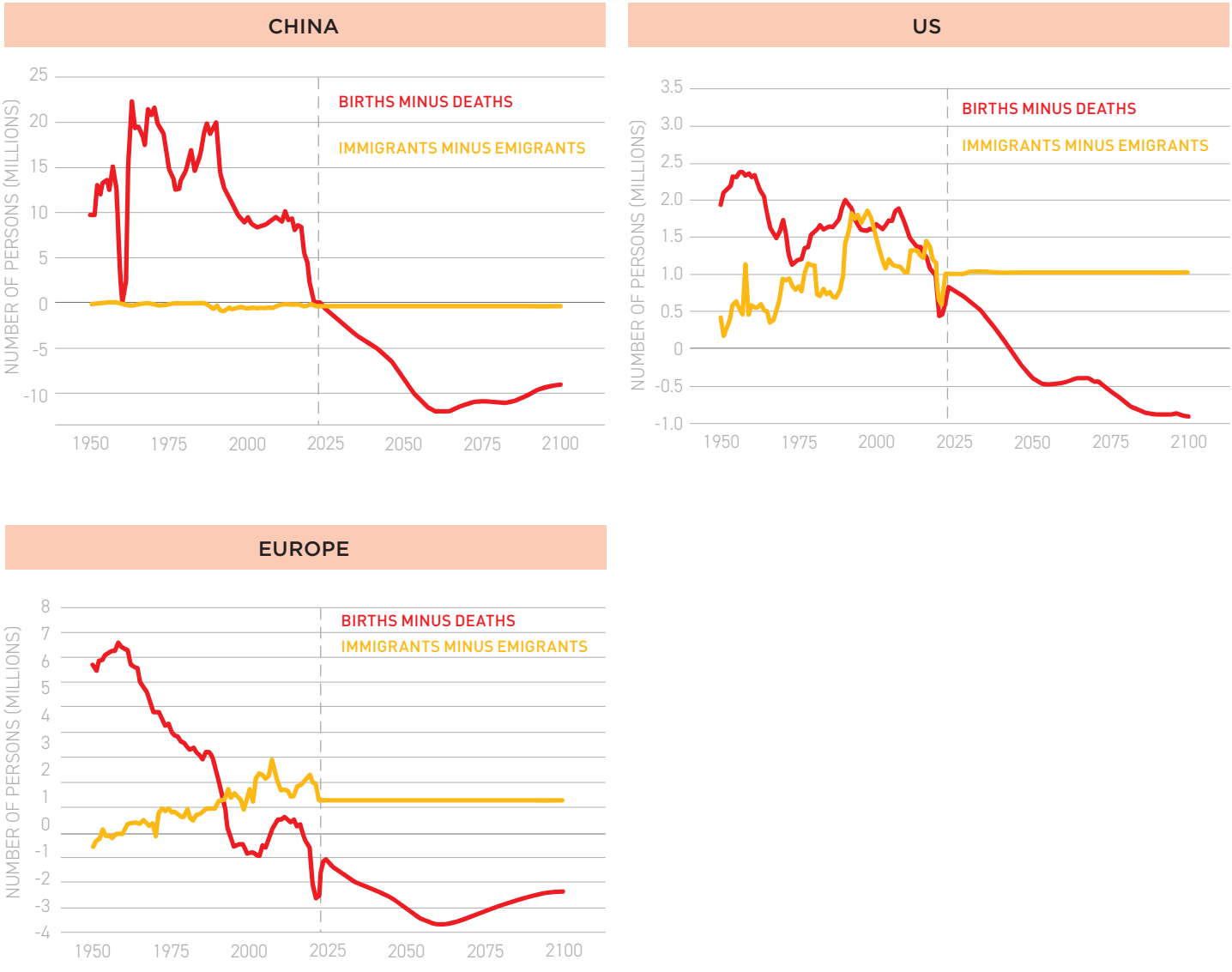
The US' projected population growth is even more pronounced when compared to other developed economies or geopolitical competitors. China possesses a larger outright population at over one billion people, but this size is reaching a plateau and likely decreasing.[4] Other G7 and EU economies are facing more dramatic population declines, especially against US growth, as detailed in *Exhibit 1*.

US labor participation is also recovering from the pandemic, as the prime-age labor force (ages 25-54) is back at pre-pandemic levels.[5] The speed of the recovery by the prime-age labor force is remarkable, as it happened within three years of the pandemic shock. In contrast, it took over ten years after the Great Recession for a similar recovery. And while the overall labor pool size is reduced from its 2020 size, largely driven by older workers not returning to the workforce post-pandemic, other bright spots for potential growth include historically high labor participation rates by women and African Americans, an encouraging trend that should be monitored.[6]

US labor participation is also recovering from the pandemic, as the prime-age labor force (ages 25-54) is back at pre-pandemic levels.

EXHIBIT 1: DEMOGRAPHIC DECLINES IN CHINA, EUROPE, AND THE US

Source: UN Population Division

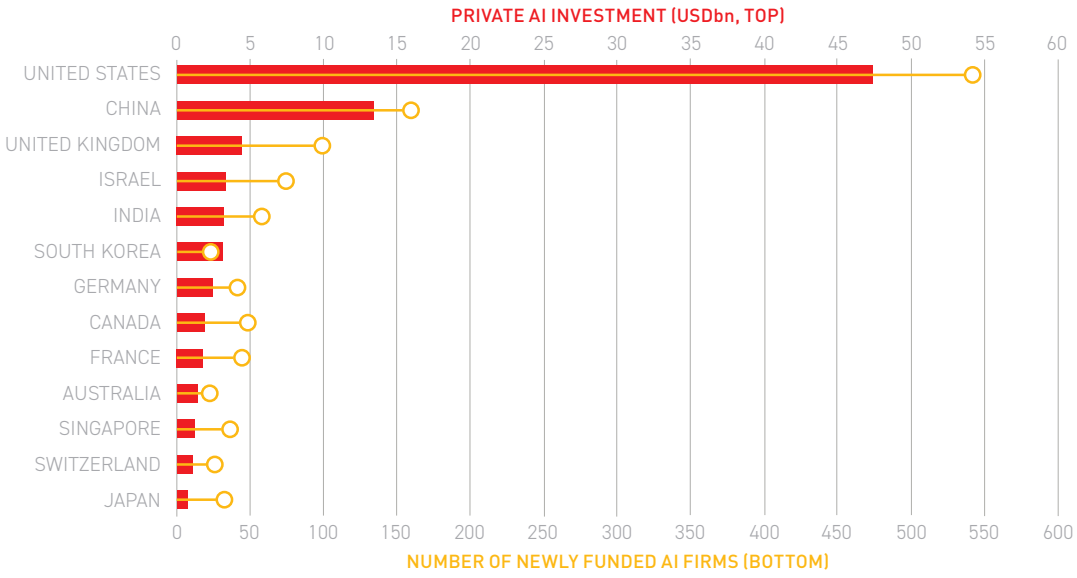


INNOVATION TRENDS

Innovation is a major contributor to economic growth and development.[7] As the world increasingly leans into the fourth industrial revolution, innovation will continue to be a driver of economic growth and investment attraction. Global competition around innovation is high, as both economic and security reasons compel countries to deliver new platforms and solutions.

EXHIBIT 2: AI PRIVATE INVESTMENT AND NEWLY FUNDED AI FIRMS, 2022

Source: Stanford University; Oxford Analytica



Currently, AI is leading the contest for innovation, and the early indications support a positive view for the US. Rather than being led by government policy, AI innovation is particularly driven by the private sector. Recent private investment placed into US-based AI firms far outweighs those placed in China or elsewhere, as do the total number of AI-focused companies founded *(Exhibit 2)*. Given China's state-led approach to economic growth, it may be difficult for China to boost innovation as it requires relinquishing a level of state control.[8]

That is not to say that government assistance is not worthwhile. China's policy actions have, after all, helped the country lead in electric vehicle manufacturing. Yet, even here the recent US policymaking response shows promise. The Inflation Reduction Act, Build Back Better Act, CHIPS and Science Act all explicitly target innovation and economic competitiveness and have led to billions of dollars in new investment.[9]

A more active industrial policy from the US government is putting significant financial resources towards boosting innovation. Rising domestic manufacturing numbers and investment flows may prove durable and popular enough to form a long-term trend that can outlive partisan rivalries. Indeed, greater government financial support for scientific R&D is a bipartisan concern, providing additional momentum.[10]

Taken together, significant private and public investment into innovation support continued strength for the next wave of industrial growth. The US already enjoys advantages as the home of many world-leading technology companies. With high barriers to entry for digital platforms and data-driven segments at this stage, these leading firms may add to long-term advantages for the US.[11]

Recent private investment placed into US-based AI firms far outweighs those placed in China or elsewhere.

RELATIVE GLOBAL POSITION

International competition is rising. China's impressive growth continues to pace several sectors. Other countries, be they traditional powers or what some are labeling as "swing states," use their financial influence, commodity exports, geopolitical positioning, or other strengths to dictate terms more robustly than in the past.[12] Yet, despite the recent rise of various powers, the US retains advantages for this age of competitiveness.

While China's economic strengths are many, concerns remain with the business environment. Rising state interference with foreign businesses, opaque policymaking and a non-convertible currency all present challenges. A recent EU report highlights the outflow of foreign investment precisely because of the current political environment in China.[13] While Hong Kong offers exceptions to some of these issues, the Chinese mainland faces structural difficulties as a course correct appears unlikely in the near term. The US, on the other hand, has a more open business environment, with a relatively transparent policymaking process and a highly convertible currency. Foreign direct investment (FDI) numbers reflect the success of this model. As *Exhibit 3* shows, foreign investment into China, as a percentage of GDP, is slowing to levels not seen for years.[14] Meanwhile, in 2021 the International Monetary Fund showed inward FDI to the US reaching over $500 billion, placing it in first place, and higher than China's $360 billion.[15] As Newmark's research highlights, this is a trend that pre-dates the industrial policy legislation of 2022.[16]

Looking beyond China, other powers bring unique value-adds to today's competitive environment. The EU, for example, has significant financial influence and a powerful single market with more consumers than the US. Ambitious "swing states" also carry their own points of leverage. For example, Turkey is an active geopolitical player with geographic importance, Indonesia has a large population and large rare earth deposits, and Brazil is both South America's largest power and a major commodity supplier.

And yet, the total advantages that the US brings to bear is singular in a way that none of these locales can match across the board. The United States is a key player in every aspect where swing states are active, be it as a buyer or supplier of goods, or a leader in the geopolitical space. The combination of these positions maintains the country's considerable influence, provided the US unites them with defined focus (as we see now with strategic supply chains around battery materials). Even when comparing against the EU, which shares similarities in economic scale and makeup, US industrial policy actions provide added incentive in an area where the EU historically had more institutional focus.

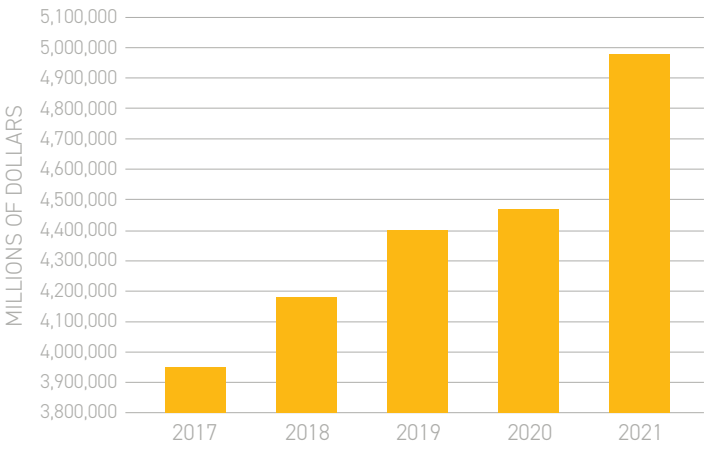
While the EU has had stricter environmental policies than the US for some time, recent US policy moves are proving competitive. The CHIPS and Science Act, for example, is more lucrative and reduces more bureaucratic hurdles when compared to the EU's incentives. It is worth noting that even where the US is individually at a disadvantage, it can marshal consensus from a range of both allies and more transaction-based states. The US' financial, political, military and cultural significance lend it a unique weight that, while not the unipolar power it was 20 years ago, still gives it a preeminent position.

EXHIBIT 3: FDI FLOWS INTO CHINA

Source: World Bank; US Bureau of Economic Analysis

EXHIBIT 3: FDI FLOWS INTO THE US

Source: World Bank; US Bureau of Economic Analysis



GOING ON HOLIDAY

HR McMaster, a former US lieutenant general and national security advisor, describes the post-Cold War years as a "holiday from history."[17] While those in the US may perceive a comparative decline over the past 30 years, the country is only reverting to the historical norm of heightened competition rather than experiencing fundamental decline. And it is in this environment that US advantages in demographics, innovation and relative global position provide optimism for success.

These three factors are not the full, complex picture, but they remain core trends that favor growth and investment, particularly as they interplay among each other. For example, nearly two-thirds of AI companies in the US are founded or co-founded by immigrants.[18] This advantage can boost US attractiveness as it looks to lead the next wave in technological growth – and resulting investment.

While the make-up of the coming economy may look different from the past, investors would be wise to consider the underlying, competitive advantages presented by US in this age of rising competition.

ABOUT THE AUTHOR

Charlie Smith serves as a Managing Director, Geopolitical Strategy in Newmark Global Consulting.

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REVIEWER RESPONSE

While I do not disagree with the author's conclusions, I would quibble with the opening premise that international competition is getting tougher and threatening the US' favored global political and economic position. My personal view is that there are larger forces at work, impacting the globalization and integration that we've enjoyed the last 30 years. Today there is a new world of economic nationalism and competition for resources that is shifting the geo-political and investment landscape. The author's conclusions nonetheless hold true – that the US is indeed well positioned, especially vis a vis demographics and innovation. The last point is particularly important as innovation fosters growth and investment across sectors, which we are seeing now with the impact of AI. Overall, the article is well written and provides a nice investment case for the US versus other geographies / countries.

– Thomas Brown
Partner,
LGT Capital Partners
Member, Summit Journal Editorial Board

CRADLE TO CRADLE

Christopher Muoio
Director, Research and Strategy
Madison International Realty

Katie Cappola
ESG Manager
Madison International Realty

A cradle-to-cradle ESG risk management approach, including analyses of climate and governance risks, and potential financial impacts, can help future-proof strategies and processes.

Madison believes well-established ESG policies are a key part of mitigating investment risk in seeking to drive real estate investment returns.

Green buildings and assets not only avoid penalties from energy usage regulations but have also shown fundamentals outperformance for years and traded for increasingly large premiums in capital markets.

In other words: ESG is not just useful for future-proofing assets, but for future-proofing portfolios as well.

ESG initiatives and programs have become a major force in the world of commercial real estate, with Preqin data showing that 51% of real estate AUM, totaling $660 billion of capital, is managed by firms that have a stated ESG commitment.[1] The perception though, is that ESG programs are not a way of driving investment outperformance through proactive risk management, but instead merely a tool for raising capital.

A survey conducted by Preqin[2] showed just 14% of investors believed fund managers establish ESG programs with the goal of outperformance, and only 19% believed they were established to mitigate investment risk. This stands in stark contrast to the 72% of respondents who believed that these programs were established due to investor desires for compliance with ESG and not due to a focus on profits and returns.

Madison has observed that penalty systems targeting carbon intensity and energy usage are gaining popularity across markets. London's Minimum Energy Efficiency Standards (MEES)[3] could mean 8% of the commercial stock in the city will be barred from new leases starting in April 2023, according to a BNP Paribas study.[4] The MEES will likely get increasingly stringent over the ensuing years, potentially barring up to 43% of buildings from new leases by 2027 if measures are not taken.[5]

In the US, New York City, Boston, Washington DC, Denver and Washington state have enacted similarly spirited regulations that instead impose penalties on the owners of assets that are not meeting their carbon intensity or energy performance targets. It is currently estimated that 34% of buildings in Boston are non-compliant with the 2030 standards.[6] The inability to operate an asset or the possibility of facing stiff penalties are massive risks to the performance of an investment's operating income that can be potentially mitigated by incorporation of ESG principles during the investment and asset management life cycle.

ESG principles also factor into investment outperformance through top-line revenue growth. Tenants have shown a preference for newer green space with lower energy and operating costs, resulting in stronger demand and fundamentals for these assets. A JLL study on office buildings in London noted that buildings with BREEAM certificates saw rents on average 11.6% higher than their peers, with a single step improvement in the Energy Performance Certificate resulting in a 4.2% increase in rents.[7]

A similar phenomenon can be observed in the US, where office buildings with LEED certifications command rents 24-42% higher than those without, depending on their submarket type.[8] Green buildings are also achieving these with less downtime, as a CoStar study has shown[9] that UK offices with Excellent and Outstanding certifications see two months shorter void periods than those with lower ratings. Fundamentals outperformance has also been observed in the industrial sector, where assets with BREEAM Excellent, Outstanding and Very Good Certifications seeing annual rent growth of 10.8%, outpacing the sector wide average by 170BPS and those with lower ratings by even more.[10]

Unsurprisingly, with stronger revenue growth, lower energy usage, lower operating costs, and the avoidance of penalties, green buildings are fetching premiums in global capital markets. Data from Real Capital Analytics shows that green office buildings trade at a premium of 35% to non-green office buildings in Paris and Sydney. This premium did not exist in 2016, which underscores the nascence of the trend.[11] In a May 2021 study, CoStar found that, in London, higher BREEAM rated buildings trade for £1,120 per square foot; a 173% premium to lowerrated buildings when, as recently as 2010, no such premium existed.[12] Similar premiums exist in the US as well, with LEED-rated office buildings averaging 31% higher pricing than those that are not rated.[13]

Given that green assets are outperforming on the growth of fundamentals, avoiding stringent penalties, and fetching premiums in capital markets, ESG programs and principles are a captivating component of an investment and asset management strategy seeking to drive sustained investment returns in commercial real estate.

CLIMATE RISK AND GOVERNANCE RIGHTS

Madison believes ESG factors, and more specifically climate risk and governance rights, can have an impact on investment performance, and managing ESG risks effectively has the potential to add value. For example, ESG team at Madison works cross departmentally to incorporate ESG considerations with the organization's operational practices and procedures.

Since January 2020, Madison has included ESG considerations as a part of the risk management profile for potential investments to help understand climate risks, and the governance rights necessary to address risks. However, Madison does not pursue an ESG-based investment strategy or limit its investments to those that meet specific ESG criteria or standards.

Madison does not only invest in "green" assets, as this limits the investment opportunity and does not support the global objective to prepare assets for the transition to a carbon free economy. Madison aims to support the transition of assets from "brown" to "green" through identifying ESG risks early, and engaging with sponsors to advance their ESG program and initiatives.

CURRENT STATE OF ESG INITIATIVES

Since 2019, Madison has worked across each department to integrate material ESG initiatives with operations. When beginning due diligence on a potential transaction, the investment team coordinates our initial ESG review, which consists of a third-party climate risk assessment and an ESG questionnaire. The earlier this information is collected, the less difficult it may be to adjust the deal to account for any relevant findings. The climate risk assessment identifies both physical and transition risks. The ESG questionnaire covers a wide breadth of ESG topics meant to benchmark the program against Madison's existing investments, and provide more information on the sponsors ESG initiatives and priorities.

When the investment team transitions investment information to the asset management team, any identified risks are subsequently reviewed. Throughout the asset hold period, the ESG team will engage with the sponsor to annually review development of their ESG program and initiatives year over year. The ESG team also collects energy and water asset-level consumption data, as well as green building certification and energy rating information.

The current level of engagement aligns with our approach to consider ESG risk. However, Madison believes there are further opportunities to proactively manage and seek to mitigate risk through enhanced integration of ESG with our investment and asset management processes to the point of value creation. Madison intends to evaluate and mitigate ESG risks while the asset is within Madison's purview in order to act as a responsible business partner.

FUTURE STATE OF ESG RISK MANAGEMENT

Madison looks to address ESG risk not just from deal inception to close (cradle to grave), but deal inception-to-deal inception, or "cradle to cradle," to help ensure decisions made within the hold period support the long-term operation of the asset. Priorities have been identified as:

- The early identification of potential risk factors
- Quantifying risk impact and underwriting mitigation measures,
- Ongoing management of risk through integration of ESG considerations when exercising applicable control rights.

Madison intends to build out its ESG risk management strategy in seeking to not only manage the short-term deal risk, but also consider the long-term asset level risk that may be identified by a potential buyer at sale.

The ESG team has met with each department to better understand their considerations, drivers, and decision-making processes to help ensure effective integration of ESG at key inflection points. The below initiatives are in the development phase. Madison intends to implement these initiatives in the next 12 months, and track and report out on their impact.[14]

Identifying Risk Early

In seeking to identify risk early, the ESG and data and strategy teams have partnered to identify data sets to inform an initial physical and transition risk review prior to the third-party assessment. An ESG risk overview slide will be added to any initial investment meeting presentation, summarizing the risk exposure per relevant market. This will provide an opportunity for discussion of potential risk factors early in the investment process, prior to the onset of formal due diligence, and customization of our ESG due diligence scope.

Quantifying and Underwriting Risk

Madison's existing ESG due diligence review requires that third parties identify risk, though moving forward, the team will request that any identified risk has a quantified financial impact. This information can then be reviewed by the investment team and inform underwriting as applicable.

Prioritizing Control Rights for Sustainable Asset Management

The asset management and ESG teams have partnered in seeking to better integrate ESG principles as a part of the asset management strategy. The team will aim to identify applicable control rights and corresponding sustainability initiatives. This could include green leasing and tracking of spend on ESG/ sustainability projects.

Data shows that green office buildings trade at a premium of 35% to non-green office buildings in Paris and Sydney.[11]

BROWN DISCOUNT

In the last year Madison has experienced firsthand the impact of a "brown discount," which describes the depreciation of an assets value due to its lack of alignment with sustainability best practices and/or lack of energy efficiency and potential obsolescence. At the time of disposition, a European buyer completed an extensive due diligence process which included a net zero energy audit and development of a decarbonization pathway and corresponding capex plan. The buyer then requested the capex plan (required to decarbonize the asset and avoid "stranding") be embedded into their valuation model, implicitly reducing the price on a present value basis. This was the first instance in which Madison has received such a request. This experience has only further increased Madison's monitoring of ESG related risks and priorities at the asset and market level.

FUTURE PROOFING INVESTMENT STRATEGIES

When whittling down the alignment of opportunities between ESG and investment strategies, we believe the primary drivers become evident: climate risk and governance rights.

The numerous data points above provide additional clarity and support for the potential financial advantages of prioritizing sustainability at an asset level from reduced vacancy rates to meeting tenant demand and complying with regulatory requirements.

As the latest IPCC report issued March 2023 stresses, the decisions made now to manage and mitigate climate risk will shape the world and financial returns long into the future. As the rest of the market starts to understand these financial risks, a history of proactive integration of ESG considerations as a part of investment processes will provide investors with increased confidence in a managers' abilities.

A cradle-to-cradle ESG risk management approach, including analyses of climate and governance risks, and potential financial impacts can future proof strategies and processes, and increase the accuracy, validity, and confidence of projected returns in an ever-changing market environment.

ABOUT THE AUTHORS

Christopher Muoio is Director, Research and Strategy and Katie Cappola is ESG Manager for Madison International Realty.

NOTES

* Madison takes a disciplined, comprehensive approach to underwriting prospective investment opportunities, employing a systematic due diligence process conducted in-house by Madison and assisted, when appropriate, by industry specialists. Madison does not pursue an ESG-based investment strategy or limit its investments to those that meet specific ESG criteria or standards. Please also see the Endnotes at the end of this presentation for further ESG information. Any reference herein to environmental or social considerations is not intended to qualify our duty to maximize risk-adjusted returns. During the investment underwriting process, Madison may, however, consider long-term ESG factors through in-depth asset, deal sponsor and company research and engagement. Madison seeks to understand material ESG risks and opportunities in the assets, sponsors, funds and companies we analyze and consider them in a way that Madison believes is suitable and consistent with its investors' mandates. Where material, Madison is committed to evaluating the impact of a company's or an asset's ESG policies in the investment process. Where consistent with Madison's duties to its clients, Madison considers ESG factors as part of its investment and asset management processes[and works with the companies in which Madison invests to promote environmental, social, and governance change] . ESG related information may be difficult to obtain in connection with real estate investing, and ESG-related factors may have little to no impact on an investment's profitability or value.

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[1] Preqin, ESG in Alternatives 2022, February 2023

[2] See Footnote 1

[3] https://www.gov.uk/guidance/domestic-private-rented-property-minimum-energy-efficiency-standard-landlord-guidance

[4] CoStar News, Up to 8% of Inner London Commercial Stock 'Unlettable' as Tighter Energy Standards Loom, February 2023

[5] See Footnote 4

[6] Reshape Strategies, "BERDO 2.0 – Boston's Bold Move to Regulate Existing Building Emissions", 03/18/2022

[7] JLL, Sustainability and Value – London Offices, January 2023

[8] CoStar, Green Office Buildings Report Even Bigger Rent, Sale Premiums During Pandemic, May 2021

[9] CoStar Analytics, Three Charts to Show Greener Commercial Properties Are Outperforming, December 2022 https://bregroup.com/products/breeam/how-breeam-works/

[10] See 8

[11] Real Capital Analytics, www.rcanalytics.com, Climate Risk: Abstract Concept to Financial Reality, January 2023

[12] See 8

[13] See 8

[14] There is no guarantee forward looking initiatives will be made within the next 12 months or at all.

REVIEWER RESPONSE

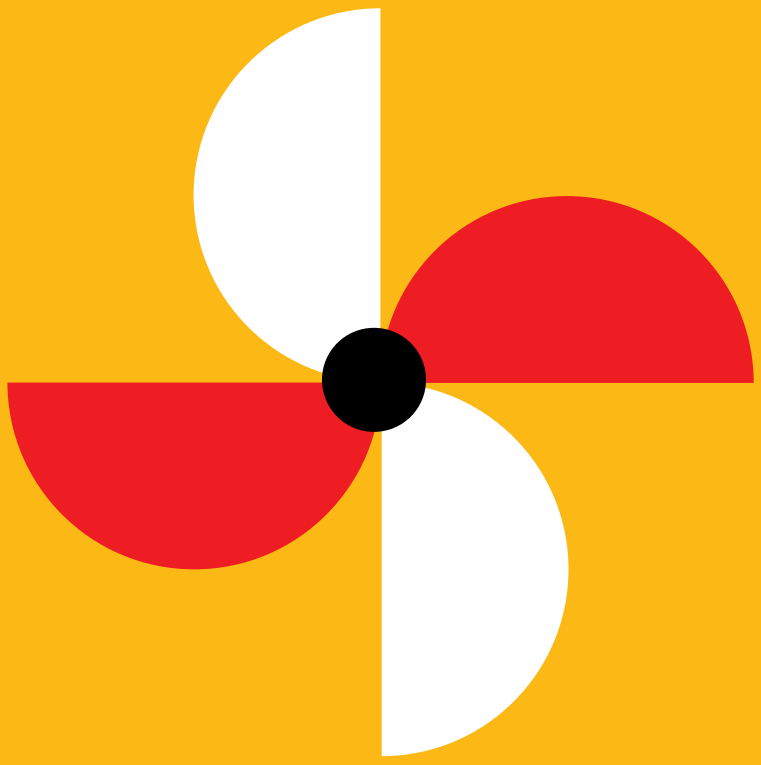
Our industry is at an inflection point in the way we think about ESG – moving beyond a myopic alignment with social good or one-off capital investments, to a multi-layered and direct linkage to stronger investment performance. We are just beginning to collect the data needed to quantify the degree to which buildings further along the path to net zero command higher rents, lower cap rates and stronger overall returns.

The authors do an excellent job looking to Europe to put forth early empirical support. In particular, the JLL data from the London office market demonstrating the positive link between BREEAM and Energy Performance certificates and higher rental rates is compelling and should be considered as an indicator of where the US is headed. The 35% premium for green office buildings in Paris and Sydney that was nonexistent in 2016, shows just how quickly the market can move and the steepness of the trajectory.

But investors cannot sit back and wait for backward-looking data to prove the case. As noted in the article, the major US office markets have recently enacted regulations to penalize owners of buildings that do not meet minimum energy efficiency or carbon reduction targets. This is an urgent call to action and investors who do not have a plan in place to meet the new requirements have a material risk to investment performance.

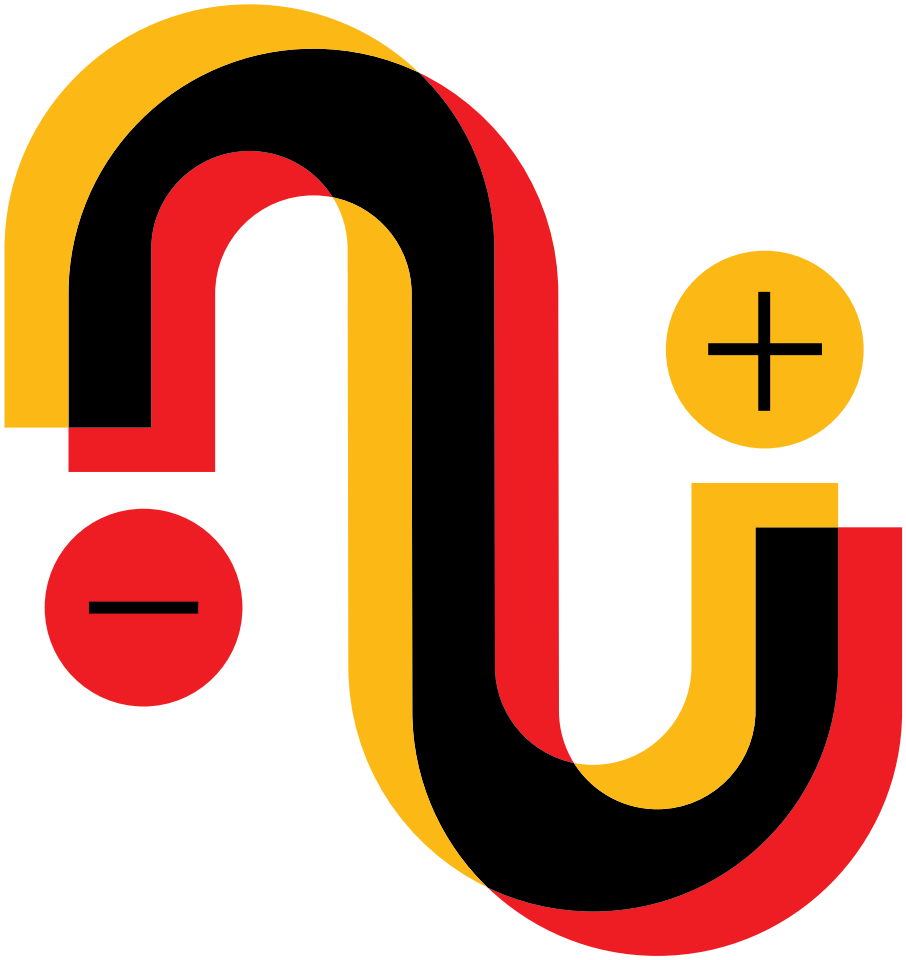
While it may be the threat of penalties that initially drives action, it's the promise of investment outperformance that will ultimately set the pace of change. Those investors, like Madison, who are forward-looking and "skate to where the puck is going" have an opportunity to lead the market and capitalize on outsized investment returns while others catch up.

– Amy Price
President, BentallGreenOak
Member, Summit Journal Editorial Board



The numerous data points provide additional clarity and support for the potential financial advantages of prioritizing sustainability at an asset level from reduced vacancy rates to meeting tenant demand and complying with regulatory requirements.

FREE LUNCH



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Some investors tend to think that diversification comes down to merely investing in different asset classes, but an effectively diverse portfolio will include assets with low and preferably negative correlation—not always easy to find in today's global economy.

Harry Markowitz, Nobel Prize laureate and creator of the efficient frontier theory, changed the fundamental view of portfolio allocation. The theories of the recently deceased Markowitz are being practiced by leading institutional and other professional investment portfolios, positing diversification as a fundamental risk management strategy.

The novelty in Markowitz's dissertation was that the risk of a portfolio was found to depend more on component stocks' correlation, rather than the prospects of those individual stocks.[1] The dissertation originally examined the stock market, but its principals apply to asset allocation in general and the allocation within each asset class[2]—a concept otherwise known as the modern portfolio theory.

Although there is no argument that diversification is a recommended risk mitigation strategy, some investors tend to think that this strategy comes down to merely investing in different asset classes. While any diversification practice is more recommended than none, some ways to implement this strategy are more efficient than others. An effectively diverse portfolio will include assets with low and preferably negative correlation, which is not always easy to find in today's global economy.

Due to high correlation between publicly traded assets, the diversification effect of an investment portfolio holding these assets is greatly reduced and even eliminated. Therefore, an investor should strive to have an investment portfolio with as many diversification parameters as possible. A properly diversified portfolio should include diversification between different asset classes, and optimal diversification within each of the asset classes.

PATIENT CAPITAL IS TRADING SOME OF THE RISK WITH ILLIQUIDITY

Risk is created by market uncertainty and is calculated by the potential negative influence of unknown factors on an investment, multiplied by its probability. The return investors expect to receive from an investment opportunity is a direct expression of the degree of risk attributed to the investment. In private equity investments, one of the main risk factors is illiquidity and its 100% probability is known in advance, thus turning it into a characteristic of an investment, rather than a risk.

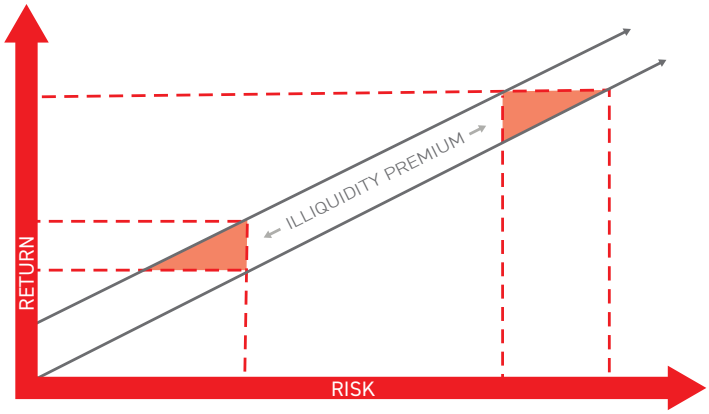
An investor with the privilege to forgo liquidity for a limited period of time (as underwritten but may change with the market circumstances) is therefore rewarded with the illiquidity premium, enabling investments to achieve higher returns at similar risk levels, or similar returns at lower risk levels.

A main component of the illiquidity premium is that due to its nature as patient capital (compared to publicly traded assets), it is not as affected by market sentiment, allowing managers to practice their skills in order to add value to the asset and determine the optimal timing to sell it. In real estate, the value of an asset is represented in the actual price it is sold for, not market predictions or analysts' speculations.

When it comes to liquidity, Warren Buffet, one of the most successful investors of all times has said: "If you are not willing to own a stock for ten years, don't even think about owning it for ten minutes," advising investors "not to watch the market too closely," or in other words: even when you have liquidity, use it wisely.

EXHIBIT 1: RISK-RETURN TRADEOFF

Source: Authors



The way to overcome barriers and maintain a professionally diverse portfolio is investing through a global fund alongside leading managers, providing broad effective diversification.

BARRIERS TO PROPER DIVERSIFICATION

Markowitz said: "Diversification is the only free lunch in finance."

In other words, diversification is known to be an effective risk management strategy, requiring access to diverse markets and the ability to fund and oversee a variety of portfolio investments.

One barrier to proper diversification is the home bias syndrome: investors tend to concentrate most of their investments in their country of origin. A survey conducted by the International Monetary Fund about this widespread phenomenon[3] found quite predictable reasons for it: distance and information gaps; loyalty to the local market; exchange rates and regulatory and bureaucratic limitations.

Another barrier to proper diversification is the high financial bar to participate in some investments, which requires investors to invest substantial funds in order to practice an effective diversification strategy.

The way to overcome these two barriers and maintain a professionally diverse portfolio is investing through a global fund alongside leading managers, providing broad effective diversification.

EFFECTIVE DIVERSIFICATION

The level of diversification of investment portfolios is determined by the number of parameters that differ from one portfolio investment to another. The more parameters defer, the larger the diversification is: buying two assets of the same sector, geography and management shall decrease asset-specific risks, but not sectorial, managerial or geographic-related risks. Practicing real estate for almost three decades, we find that we are more in the people business than in the real estate business, and that investing with trustworthy investment managers is just as important as the asset itself.

Since most real estate professionals have a specific expertise, sectorial strategic and geographic focus, diversification between global real estate managers, also has inherent geographic, strategic, and sectorial diversification, as well as currency diversification at times.

Low correlation between assets is amplified with the number of factors not shared by them. Investments underlined by a logistics-focused manager in the UK shall have very little in common with a Connecticut-based multifamily manager. The amplification is exponential rather than linear, or in other words: multi-dimensional.

Investing in a global managerial-diversified portfolio is likely to achieve multi-dimensional diversification, and with the proper due diligence process assuring top-quartile quality managers, it serves as the private equity real estate equivalent to investing in the tradable market using skillful experienced stock pickers, with the ability to mitigate risk even better than index funds.

Despite uncertainty, the forthcoming ventage years (2023-2024) are expected to be interesting and provide extraordinary opportunities for patient capital, professionally managed by trustworthy managers.

ABOUT THE AUTHORS

Elchanan (El) Rosenheim is Founder and CEO of Profimex and Tali Hadari is Head of Legal Department and Manager of Prodimex' in-house funds. Profimex makes global equity investments alongside local strategic partners.

NOTES

[1] Markowitz, H. (1952). Portfolio Selection. The Journal of Finance, 7(1), 77–91.

[2] Keith Ambachtsheer. (2005). Beyond Portfolio Theory: The Next Frontier. Financial Analysts Journal, 61(1), 29–33.

We find that we are more in the people business than in the real estate business, and that investing with trustworthy investment managers is just as important as the asset itself.

CAMPAIGN MESSAGING

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Growing anti-China sentiment is largely driving the policy discussion around foreign investment in US real estate—particularly Chinese-ownership, transactions involving farmland, and overall national security interests.

Unlike many countries, the United States has generally remained open for investment in US real estate by foreign owned entities, albeit with some government oversight. The primary regulatory hurdle has long been the Committee on Foreign Investments in the United States (CFIUS), a federal interagency committee with a relatively narrow scope of review related to national security interests.

Additionally, the Agricultural Foreign Investment Disclosure Act of 1978 (AFIDA)[1] requires increased transparency for transactions related to agricultural land in particular. As discussed below, growing anti-China sentiment is largely driving the policy discussion around foreign investment in US real estate, particularly Chinese-ownership, transactions involving farmland, and overall national security interests.

BACKGROUND ON CFIUS

Originally established by executive order in 1975 to study foreign investment, CFIUS's authority has expanded over time and now includes the coordination of several departments and agencies, along with White House offices as needed, such as the National Security Council and the National Economic Council. Certain real estate transactions are reviewed by CFIUS if they pose a potential national security risk, in which case, CFIUS may seek agreement with the parties to the transaction to mitigate any risk to the US government.

Under 31 C.F.R. Part 802,[2] CFIUS has jurisdiction over real estate purchases by foreign investors in proximity to specific maritime ports, airports, and military installations. Additionally, AFIDA requires foreign investors who purchase, transfer, or hold agricultural land to file a report with the US Secretary of Agriculture within 90 days following the transaction. These filings are compiled by the Farm Service Agency (FSA) into an annual report to Congress, which is also publicly available on the FSA website, essentially providing a national database of foreign ownership of agricultural land.

In addition to CFIUS and AFIDA, real estate transactions by foreign investors are subject to federal reporting requirements under various tax, antitrust, and immigration laws, as well as export control rules and regulations. States also have extensive reporting requirements for real estate transactions by foreign persons, much like the federal requirements under AFIDA.

In 2022, Fufeng USA, a subsidiary of a Chinese company, purchased 370 acres of land in Grand Forks,[3] North Dakota. Federal and state legislators, as well as the Air Force, criticized the purchase due to the land's proximity to Grand Forks Air Force Base, home to military drone technology research and a space networking center. However, CFIUS determined, somewhat controversially, that it lacked jurisdiction to review the transaction. The Fufeng purchase, along with heightened national security concerns about foreign investment generally, has sparked a widespread response to restrict the purchase of certain real estate by foreign investors. While this response includes both federal and state actions, the more aggressive policy proposals have occurred at the state level.

Following the Fufeng purchase, CFIUS issued a proposed rule[4] to add eight military installations to the current list of applicable US Government sites. Further, several Members of Congress have introduced legislation to prohibit the purchase of real estate by foreign persons and entities, a legislative response that spans both parties and both chambers of Congress. For example, in the Senate, Senator Tom Cotton (R-AR) introduced the Not One More Inch or Acre Act,[5] which would prohibit the purchase of real estate in the US by Chinese citizens or entities.

Bipartisan proposals include the PASS Act,[6] which is sponsored by Senators Mike Rounds (R-SD) and John Tester (D-MT) and would specifically restrict the purchase of agricultural companies and land by Chinese, Russian, Iranian, and North Korean foreign persons and entities. In the House, Representative Elise Stefanik (R-NY-21), a member of House leadership, and Representative Rick Crawford (R-AR-01) introduced the Agricultural Foreign Investment Transparency Act[7] to update AFIDA and expand oversight of agricultural land purchased by foreign persons.

In addition to introducing standalone bills, Members have also proposed amendments to must-pass legislation, such as the National Defense Authorization Act (NDAA), to address foreign investment in US real estate. For example, Senator James Lankford (R-OK) has introduced an amendment to the NDAA to include the SOIL Act,[8] which would expand the scope of transactions reviewed by CFIUS.

While American politics remains increasingly divisive, one of the strongest bipartisan issues centers around anti-China policy.

STATE ACTIONS

There has been a flurry of state action on foreign ownership of real estate this year. Thirteen legislatures have enacted laws to limit the foreign purchase and ownership of real estate, particularly agricultural land and land in proximity to military facilities.

Some states have targeted persons and entities from specific countries. For example, Florida,[9] Indiana,[10] Louisiana,[11] and North Dakota[12] prohibit the purchase of certain types of land by persons and entities from identified countries such as China, Iran, North Korea, and Russia. At the time of this writing, there are 32 bills with similar restrictions pending in 13 state legislatures. 56 similar bills were introduced but failed to pass in 19 state legislatures before they adjourned, making them ripe for consideration in future legislative sessions.

It is critical to understand the political context in which these federal and state policies are proposed. While American politics remains increasingly divisive, one of the strongest bipartisan issues centers around anti-China policy, creating common ground among strange bedfellows, from "America First" nationalists to national security hawks to progressive populists.

The debate is wide-ranging, from military readiness and access to critical minerals, to domestic production and human rights protections. For example, last year, Congress and the Biden Administration worked together to enact the Chips and Science Act[13] in an effort to improve American competitiveness against China and promote domestic semiconductor production, with Senate Majority Leader Chuck Schumer (D-NY) already pledging a second installment of China-competitiveness legislation.

Mounting concern over China's human rights abuses, particularly Uyghur forced labor in the Xinjiang province, culminated in the passage of the Uyghur Forced Labor Prevention Act,[14] which imposes sanctions and import restrictions related to the items produced in the region. Bipartisan outrage ensued as a Chinese spy balloon flew over the United States, ultimately being shot down at the direction of President Biden and delaying Secretary of State Antony Blinken's impending trip to China. Indeed, one of the first bipartisan acts at the start of the 118th Congress was the formation of the Select Committee on the Chinese Communist Party, whose self-purported mission is to "build consensus on the threat posed by the Chinese Communist Party and develop a plan of action to defend the American people, our economy, and our values."

The debate over increasing restrictions on foreign investment in real estate in the United States will likely continue at the federal level and in future state legislative sessions.

PLANNING FOR FUTURE CHANGES

Ultimately, the policies proposed today become campaign messaging tomorrow. Based on Congress' track record thus far, as the 2024 presidential election cycle heats up, so will the anti-China rhetoric. Accordingly, the debate over increasing restrictions on foreign investment in real estate in the United States will likely continue at the federal level and in future state legislative sessions. Moreover, legal challenges may arise as some state laws may be preempted by CFIUS.

Foreign investors in US real estate should be mindful of this rapidly evolving legal landscape and opportunities to engage in this policy debate.

ABOUT THE AUTHORS

Caren Street is a Principal in the Public Policy Practice Group; John Thomas leads the Real Estate Practice; and Anya Bharat Ram served as a 2023 summer at Squire Patton Boggs.

NOTES

[1] Agricultural Foreign Investment Disclosure Act of 1978 [Public Law 95-460] [as amended through P.L. 110–246, effective May 22, 2008] [7 U.S.C. §§ 3501-3508]

[2] Regulations Pertaining to Certain Transactions by Foreign Persons Involving Real Estate in the United States, 31 C.F.R. Part 802 (2020)

[3] CFIUS Determines it Lacks Jurisdiction to Review Chinese Land Acquisition, TRADE PRACTITIONER BLOG on June 26, 2023

[4] Provisions Pertaining to Certain Transactions by Foreign Persons Involving Real Estate in the United States, 88 Fed. Reg. 29003 (proposed May 5, 2023) (to be codified at 31 C.F.R. pt. 802)

[5] Not One More Inch or Acre Act, S. 1136, 118th Cong. § 2 (2023)

[6] PASS Act of 2023, S. 168, 118th Cong. § 2 (2023)

[7] Agriculture Foreign Investment Transparency Act, H.R. 9483, 117th Cong. § 2 (2022)

[8] SOIL Act of 2023, S. 1066, 118th Cong. §§ 2-3 (2023

[9] Florida CS/CS/SB 264

[10] 2023 Indiana Senate Enrolled Act No. 477 §§ 1-4

[11] Louisiana House Bill No. 125 § 3613

[12] North Dakota Senate Bill No. 2371 §§ 1-5 (2023)

[13] Chips and Science Act, Pub. L. No. 117-80, 117th Cong. (2022)

[14] Uyghur Forced Labor Prevention Act, Pub. L. No. 117-78, 117th Congress (2021)

ABOUT AFIRE

AFIRE is the association for international real estate investors focused on commercial property in the United States.

Established in 1988, AFIRE is a nonprofit trade association headquartered in Washington, DC, and is an essential forum providing high-value thought leadership for real estate leaders from around the world.

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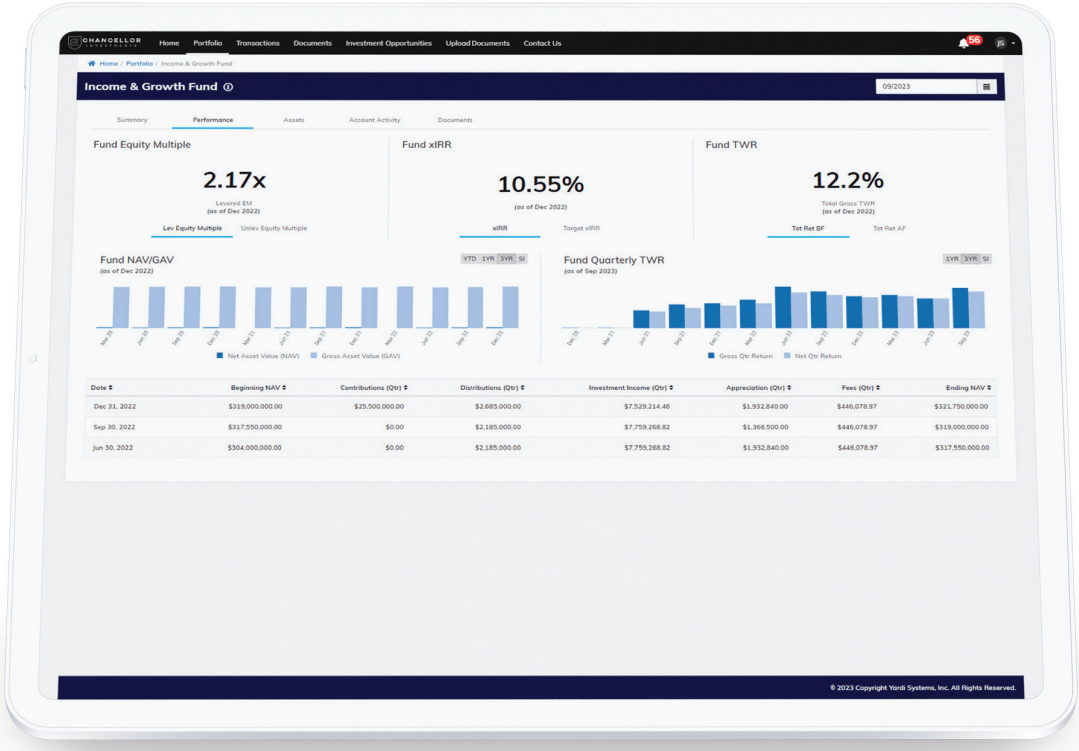

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