BankDirector

Breakout 5:
The KBW Research Perspective: What We Expect to Drive Bank Stocks Through 2025

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The KBW Research Perspective:

What We Expect to Drive Bank Stocks Through 2025

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Please refer to important disclosures and analyst certification information on pages 59–62 of this report.

Agenda

1. Current State of the Banking Industry (Chris McGratty)

- Banks Underperformed in 2023, but KBW Remains Market Weight
- Risk of EPS Revision "Handoff" from NII to Credit Normalization
- Valuations Remain Cheap, but Isn't Enough of a Catalyst

2. Commercial Real Estate (CRE) and Housing Market (Bose George and Jade Rahmani)

- Problems Facing the CRE Market Today
- Housing Market Update and Key Issues Moving Forward

3. Where Do Banks Go From Here? (Chris McGratty)

- Analyzing ROTCE Potential Across the Banking Industry – Chutes and Ladders
- Profitability and Valuation Scale – Both Up and Down

Current State of the Banking Industry

Cheap Isn't Enough of a Catalyst

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2024 Outlook: Themes to Consider and Alternative Scenarios

KBW's Call on the Banks for 2024

- Market weight still our call as EPS risk shifts to credit normalization

Big Picture Question

- Banks have lagged and valuations are cheap, but will they work ahead of a potential credit cycle?

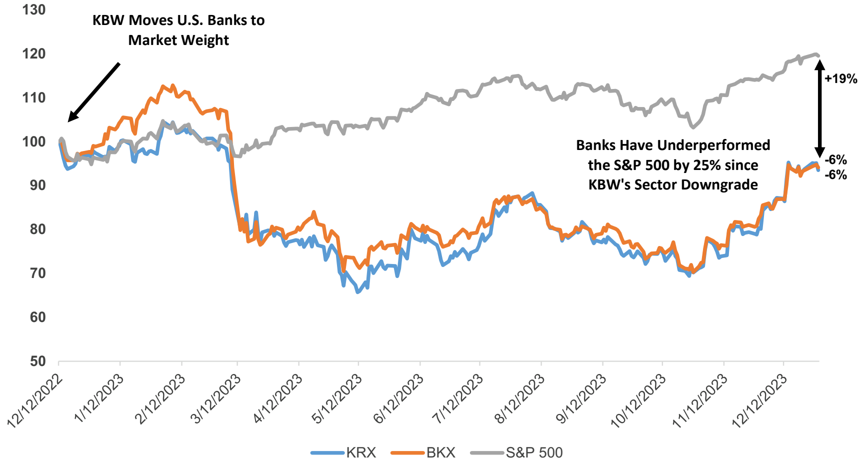
	Change in Rates	What to Own?
KBW Base Case	Economic slowdown and soft(ish) landing with 50bps of rate cuts	1. Inexpensive Balance Sheets Relative to Return Outlook 2. Banks Expected to Meaningfully Grow TBV/Share 3. Banks with Capital Markets for a Revenue Rebound
"Higher for Longer"	No rate cuts	1. Banks with back book repricing 2. Banks with quality deposits 3. Banks with better than peer credit
Meaningful Credit Deterioration	>150bps of cuts	1. Liability sensitive stocks 2. Credit safe havens

Source: KBW Research.

Banks Significantly Underperformed in 2023, but KBW Remains Market Weight

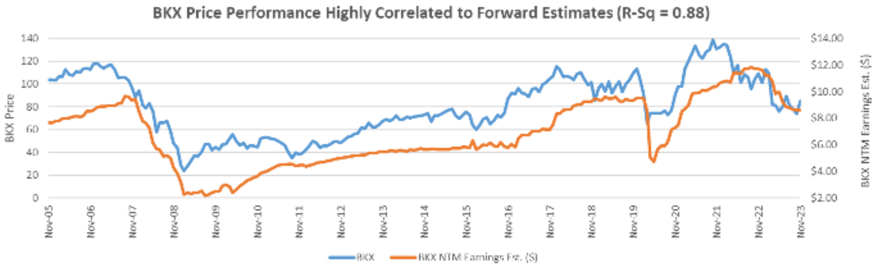
KBW Lowered U.S. Banks to Market Weight in December 2022

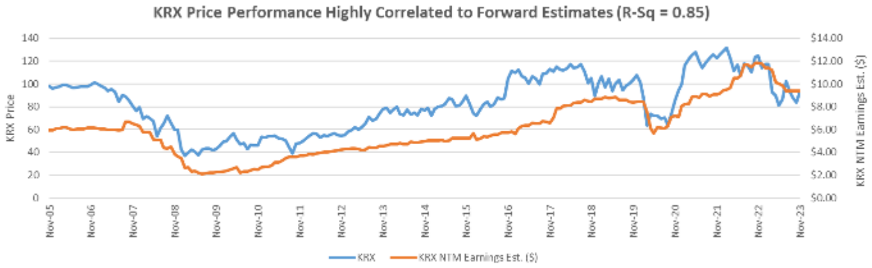
- Peak earnings and challenging re-rating thesis
- 25% relative underperformance vs. S&P 500



Bank Stocks and EPS Estimates Highly Correlated

- “Cheap enough" given EPS risk from credit?

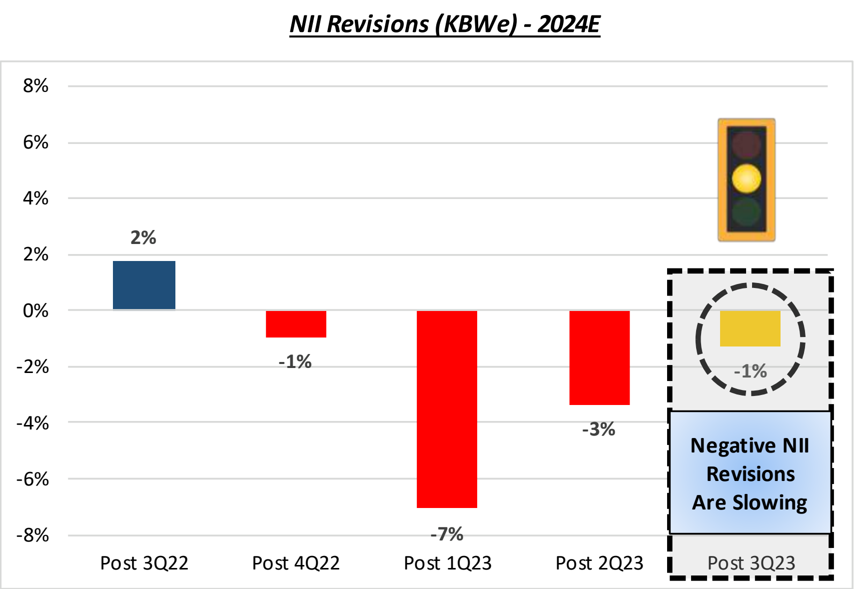


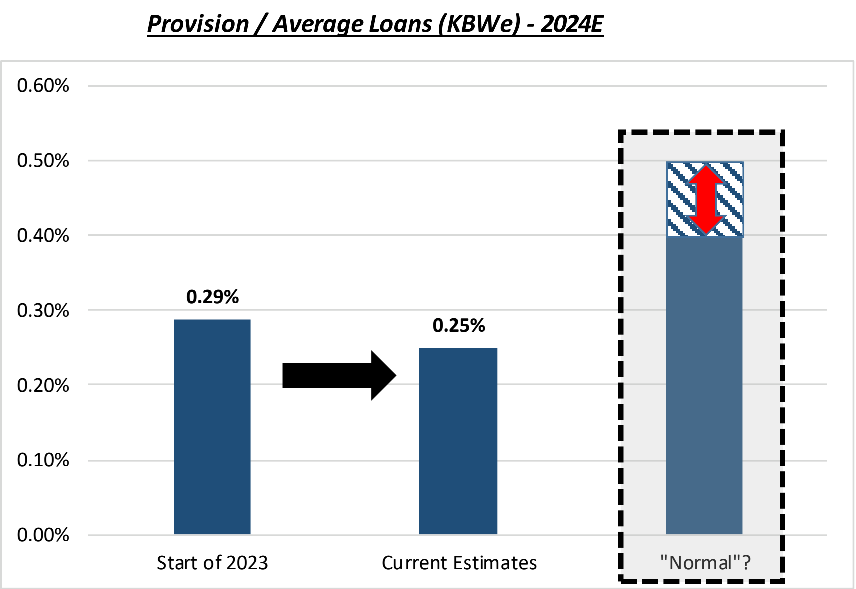


Source: KBW Research and FactSet.

NII Revisions Appear to be Stabilizing, but Degree of Credit Normalization Remains a Question

- The “second derivative” for negative NII revisions has slowed as deposit trends have stabilized
- KBW’s credit assumptions actually moderated (improved) throughout 2023 – despite economic concerns
- 40-50bp of annual credit costs not unreasonable if the economy weakened beyond our current assumptions

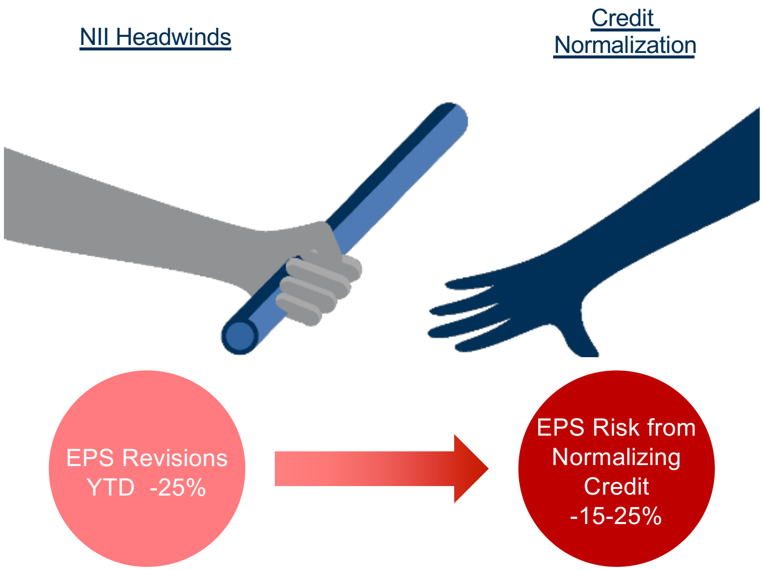




Source: KBW Research.

An EPS Revision Relay Race: Passing the Baton from NII to Credit

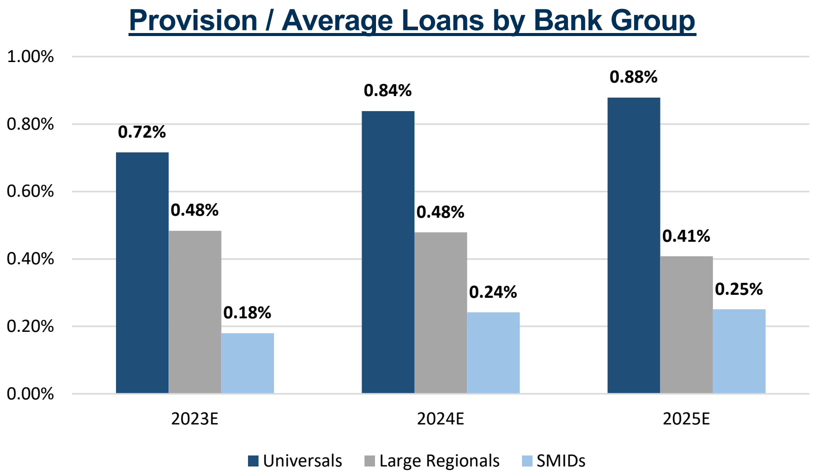
- Potential EPS "handoff" risk from moderating NII headwinds to potential credit normalization
- KBW reduced our 2024E by -25% last year almost entirely due to declining expectations for NII
- Stressing 2024E credit to 40-50bps (from 25bps) could put our EPS estimates at risk by another 15-25%



Source: KBW Research.

KBW Rule of Thumb

- Every 1bp increase in credit costs = -1% to EPS



KBW Fundamental Outlook 2024-2025E

Key Metrics	2022A	2023E	2024E	2025E
Loan Growth (ann.)	14%	5%	4%	4%
Deposit Growth (ann.)	2%	2%	3%	3%
NIM Delta	0.29%	-0.04%	-0.09%	0.07%
NII Growth (y/y)	16%	3%	0%	5%
EPS Growth (y/y)	0%	-9%	-8%	9%
PTPP ROAA	1.66%	1.50%	1.47%	1.53%
ROAA	1.20%	1.04%	0.95%	0.99%
ROTCE	16.2%	14.2%	12.0%	11.9%
Efficiency Ratio	56.4%	59.7%	61.1%	60.2%
Expense/Avg Assets	2.15%	2.26%	2.28%	2.27%
Provision / Avg Loans	0.15%	0.19%	0.25%	0.26%
NCOs/ Avg Loans	0.04%	0.10%	0.18%	0.21%
Reserves / Loans	1.15%	1.20%	1.22%	1.22%
TCE/TA	7.7%	8.1%	8.6%	9.1%
Total Payout Ratio	40%	42%	42%	39%
Dividend Payout Ratio	30%	33%	38%	35%

2024E

- EPS estimated to decline by -8% y/y
- NIM compression, slower growth, and modest credit normalization
- Negative operating leverage and declining ROTCE (12% vs. 14% y/y)

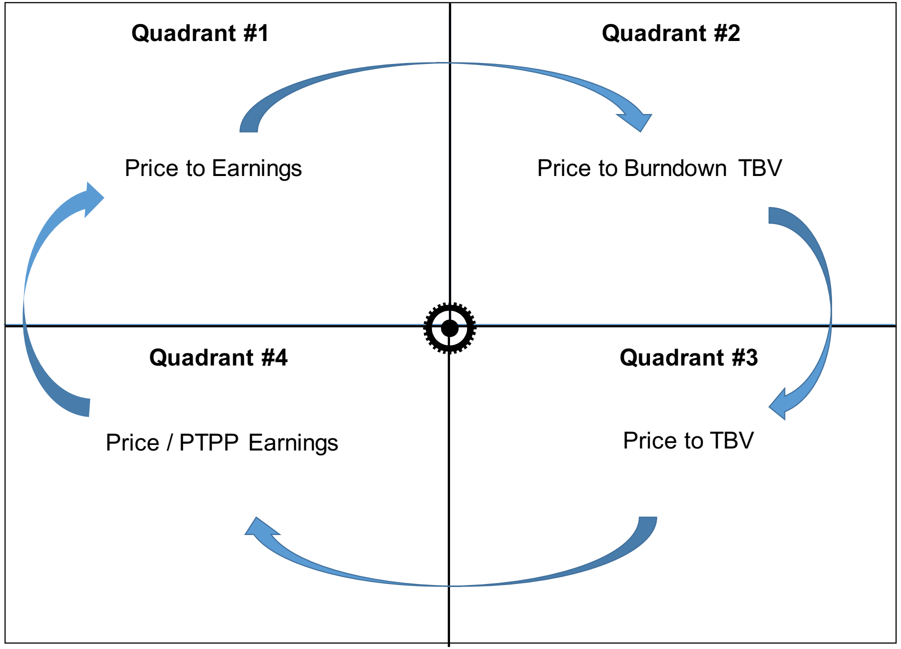
2025E

- EPS growth of 9% y/y
- NIM expansion from rate cuts (50bps in 2024E and 75bps in 2025E)
- ROTCE stabilizes at 12%

Source: KBW Research.

KBW's Wheel of Bank Stock Valuation: The Approach Needs to be Flexible

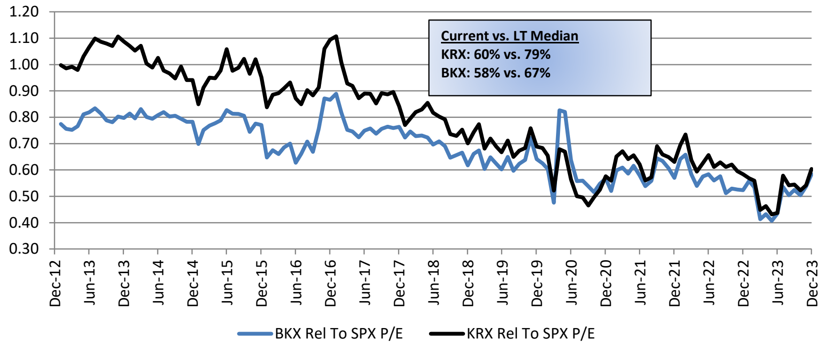
- **Price to Earnings** – Most used metric; most analysts/investors focus 1-2 years out
- **Price to Burndown TBV** – Alternative metric in credit crisis to evaluate balance sheet strength
- **Price to TBV** – Commonly used during periods of increased credit uncertainty; frequently compared to a bank's return profile (ROTCE)
- **Price to Pre-Tax, Pre-Provision** – Hybrid valuation tool measuring ability to absorb credit losses when conditions deteriorate / less certain



Source: KBW Research.

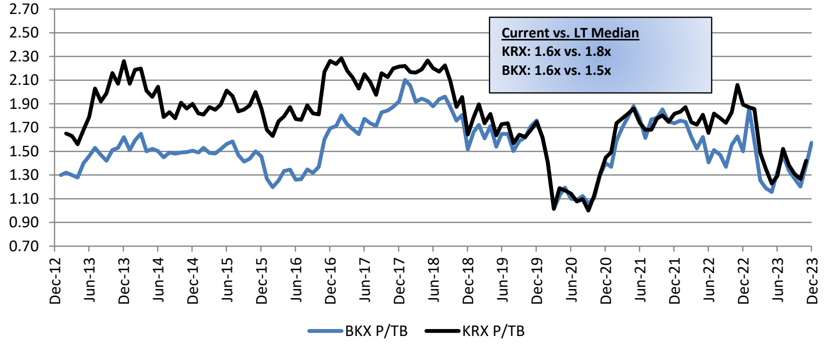
Bank Relative Valuation Multiples – P/E and P/TBV (Traditional Metrics)

Bank Relative P/E Multiples



- Bank valuations continue to trend downward with BKX & KRX both trading at ~60% of the S&P 500
- Contributing factors include declining revenues, funding pressures, and late-cycle credit risk

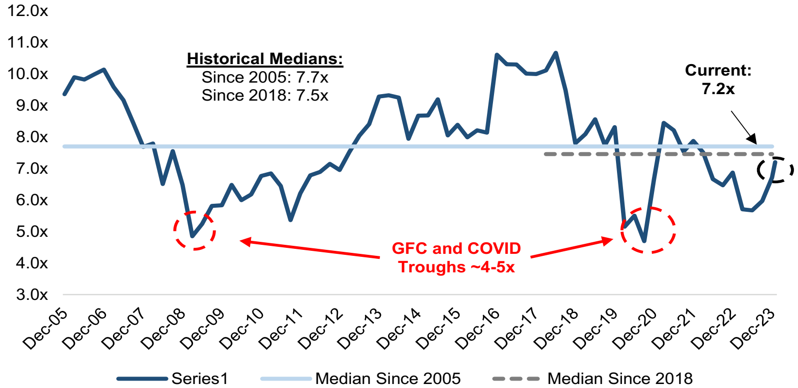
Bank Relative P/TBV Multiples

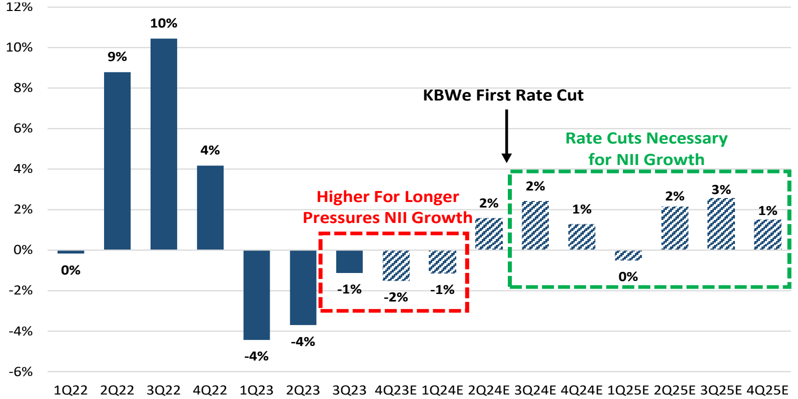


- KRX trades at a 11% discount to historical average, while BKX trading more in-line
- Pressure on P/TBV multiples reflect credit, interest rate, and regulatory uncertainty

Source: KBW Research, FactSet, and Bloomberg.

Bank P/PPNR Multiples Approaching Historical Averages as NII in Bottoming Process





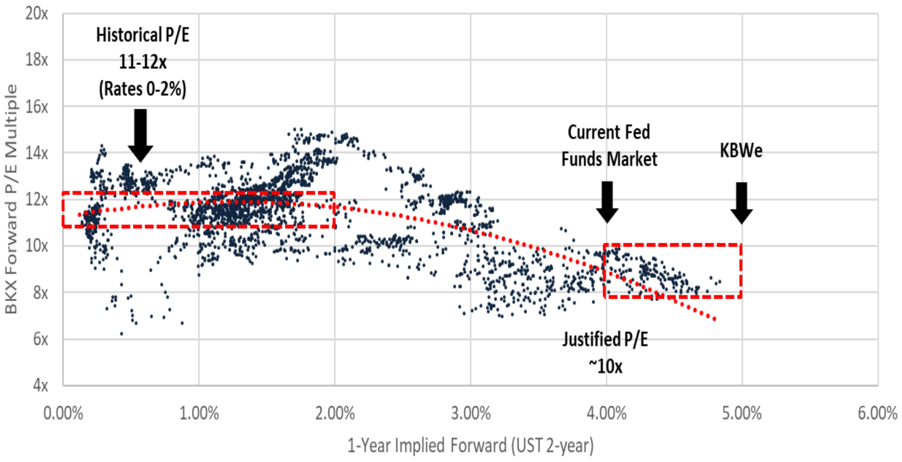
- Banks trade at 7.2x, or a -7% discount to long-term multiples
- Valuations have recovered recently and remain comfortably above historical trough multiples of 4-5x (GFC and COVID)
- NII likely bottoms during 1H24, but then “bounce around the bottom”
- Rate cuts are necessary before consistent positive NII growth can resume

Note – Bottom chart represents q/q change (not annualized) in NII for all banks under KBW Research coverage (median).
Source: KBW Research and FactSet.

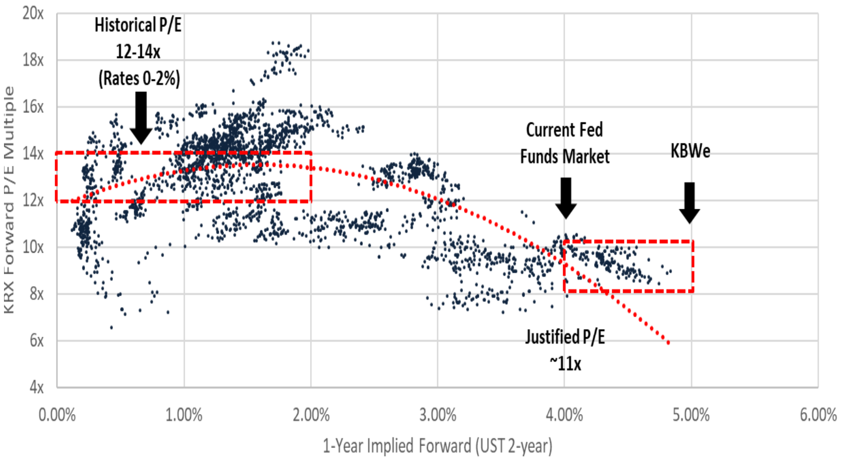
What's the Right Multiple to Put on the Banks? Our Work Suggests 10-11x

- Bank P/E multiples and rates are inversely related
- Justified P/E of 10-11x based on rate outlook - stocks at or above these levels today
- This implies market may be starting to price in positive EPS revisions – premature in our view

BKX (2-Year UST Implied Forward vs. Forward P/E Multiple)



KRX (2-Year UST Implied Forward vs. Forward P/E Multiple)



Source: KBW Research and Bloomberg.

KBW Commercial Real Estate Credit Update

Navigating CRE Turbulence, Awaiting Positive Signs

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KBW CRE Outlook – No Soft Landing & Too Early to Get Positive

- ***Peak-to-trough value declines of 25-30%***, implying a further 5-10% in 2024 with slow 2025 recovery.*
- ***Debt maturities of $1.2 trillion through 2025*** to drive CRE stress.
- ***2024 CRE volumes to decline an additional 1%*** before market bottom in 1H24.
- ***1-3% loan losses,*** higher in office, transitional, and floating-rate loans.
- ***Losses could be widespread*** as CRE debt grew 27% since 2019, including banks by 26%, life insurance 25%, GSEs 33%, and non-banks 28%.
- ***Office stress is secular*** to play out over years.
- ***Multifamily stress anticipated*** in floating-rate, bridge, 2021-2022 loans, and/or boom supply markets.
- ***At-risk markets:*** San Fran, NYC, Los Angeles, Portland, DC, Seattle, Phoenix, Austin, Minneapolis, others.

** Value declines based on indications from closed transactions, not a universal repricing of CRE.*

CRE Math Is Broken

- Returns are unattractive for institutional funds, which require double digit IRRs.
- Implies negative spreads and mid-single digit levered returns.

Multifamily Acquisition Case Study

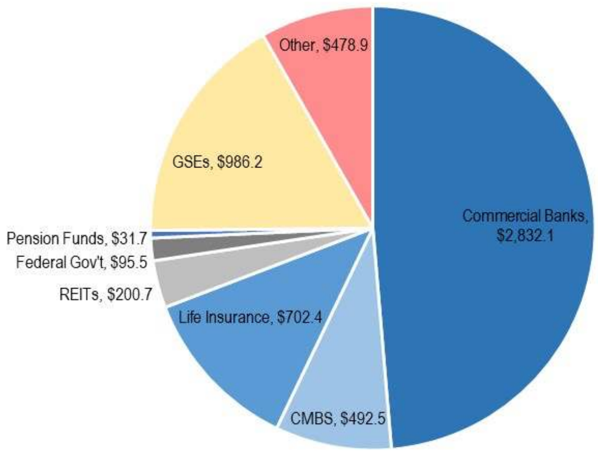
Year	**0**	**1**	**2**	**3**	**4**	**5**
Rent Per Unit (100 Units)		$1,500	$1,500	$1,560	$1,607	$1,639
Rent Growth Y/Y		*0.0%*	*0.0%*	*4.0%*	*3.0%*	*2.0%*
% Vacancy & Credit Loss		*7.0%*	*6.5%*	*5.5%*	*5.5%*	*5.5%*
Effective Gross Income		**$1,674,000**	**$1,683,000**	**$1,769,040**	**$1,822,111**	**$1,858,553**
Total Operating Expenses		($753,300)	($790,965)	($830,513)	($855,429)	($881,092)
Y/Y Growth, %		*5.0%*	*5.0%*	*5.0%*	*3.0%*	*3.0%*
Net Operating Income (NOI)		**$920,700**	**$892,035**	**$938,527**	**$966,683**	**$977,462**
Debt Service (6.25% Fixed, 30-Year Amortizing)		($736,560)	($736,560)	($736,560)	($736,560)	($736,560)
Free Cash Flow		**$184,140**	**$155,475**	**$201,967**	**$230,123**	**$240,902**
DSCR		*1.25x*	*1.21x*	*1.27x*	*1.31x*	*1.33x*
Returns Analysis						
Purchase Price	($17,242,200)					
Mortgage Proceeds	$9,870,000					
Property Sale Proceeds						$17,772,035
Mortgage Repayment						($9,212,000)
Cap Rate	*5.50%*					*5.50%*
Levered FCF	**($7,372,200)**	**$184,140**	**$155,475**	**$201,967**	**$230,123**	**$8,800,937**
Net Capital Gain (Loss)	**$2,200,441**					
Levered IRR	**5.6%**					
Equity Multiple	**1.30x**					

Source: KBW Research.

CRE Debt and Investor Holdings – Up Since 2019 w/ Large Fund Ownership

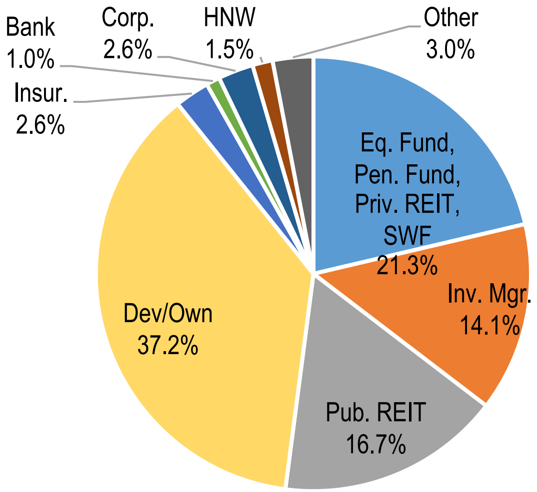
U.S CRE debt up 27% since 2019; 49% held by banks, 17% GSEs, 12% life cos, and 20% non-banks.

U.S. CRE Debt Outstanding - $5.8 Trillion



CRE assets held 35% by funds, inv. managers, and private REITs, 37% by developers/owners, and 17% by REITs**.**

U.S. CRE Investor Composition - $20 Trillion



Source: Federal Reserve, Real Capital Analytics, and KBW Research.

KBW's CRE Loan Loss Framework Implies 1-3% Loan Losses

Basic Loss Framework:

	Low	High	Avg.
Delinquency rate	4%	8%	6%
Default probability	25%	75%	50%
Loss severities	20%	40%	30%
Cum. loss	**0.2%**	**2.4%**	**1.3%**
Leverage (debt/equity)	1.5x	2.5x	1.9x
Cumulative equity loss	**0.5%**	**8.4%**	**3.8%**

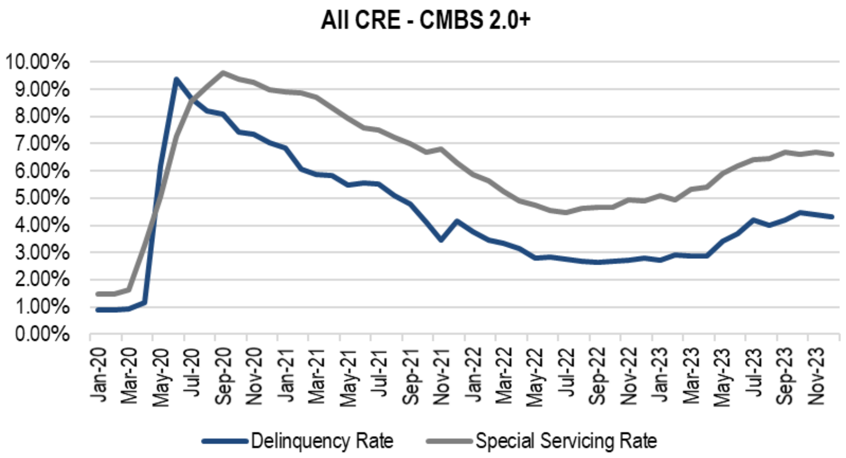
Detailed Loss Framework:

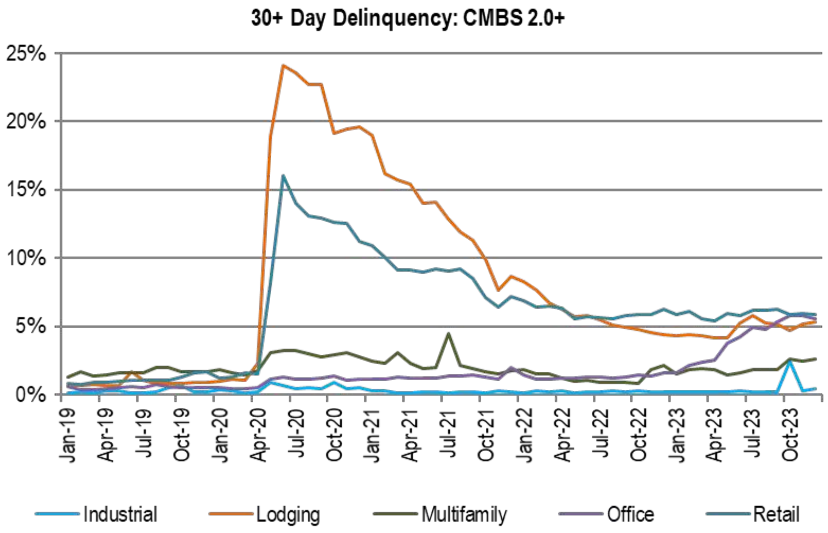
KBW CRE Loss Model	Low	High	Avg.
First Mortgage Loss			
Ending LTV	50.0%	75.0%	62.5%
Default rate (delinq. assumption * default %)	1.0%	7.5%	4.3%
Property price decline	20.0%	40.0%	30.0%
Other costs (mod., foreclose, capex, etc.)	5.6%	17.5%	11.6%
Total collateral losses	**25.6%**	**57.5%**	**41.6%**
Remaining collateral basis	74.4%	42.5%	58.5%
Loss severity	**0.0%**	**43.3%**	**6.5%**
Total, first mortgage cumulative loss	**0.0%**	**3.3%**	**0.3%**
Corporate leverage (assets/equity)	1.5x	3.0x	2.3x
Total loss to equity	**0.0%**	**13.0%**	**0.9%**
Subordinate Mortgage Loss			
Ending LTV	70.0%	85.0%	77.5%
Beginning LTV	50.0%	50.0%	50.0%
Loss severity for first mortgage	0.0%	15.0%	7.5%
Remaining collateral proceeds for sub. position	24.4%	0.0%	8.5%
Loss severity for sub. position	**0.0%**	**100.0%**	**100.0%**
Interest expense (to first mortgage holder)	5.6%	12.9%	9.2%
Total, sub. mortgage cumulative loss	**0.1%**	**8.5%**	**4.6%**
Corporate leverage (assets/equity)	1.5x	2.5x	2.0x
Total loss to equity	**0.1%**	**29.6%**	**13.9%**
Avg. loss to equity (assuming 75% 1st mtg./25% sub. debt)			**4.2%**

Source: KBW Research.

CMBS Credit – Delinquency Rates & Special Servicing Show Credit Pressure

- CMBS 2.0+ December DQ's (30+ days): 4.31% (incl. office 5.58%).
- Special servicing loans in December: 6.60% (incl. office 8.85%).

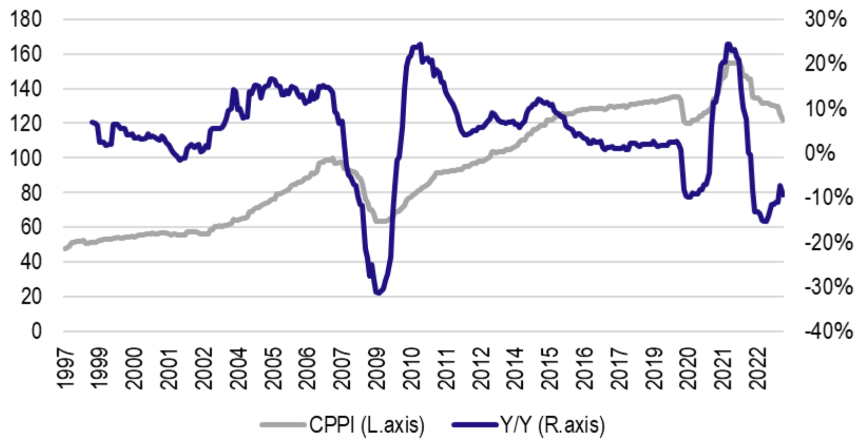




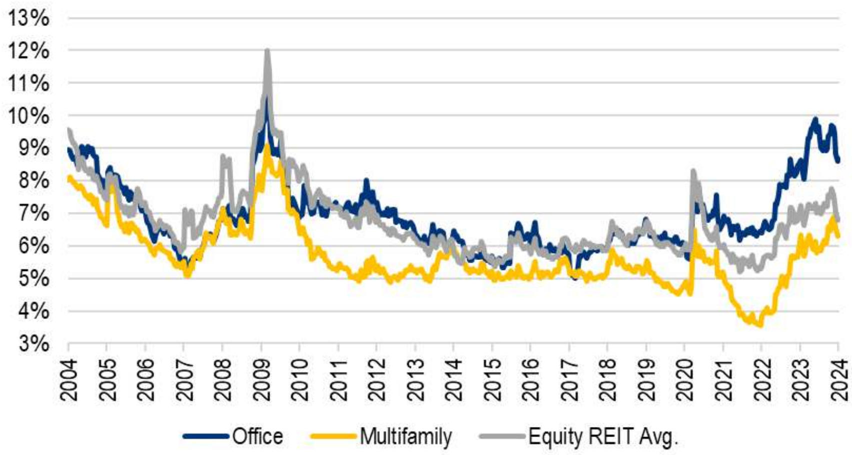
Source: Trepp and KBW Research.

CRE Valuations – Private and Public Markets Show 15-20%+ Declines

Green Street Commercial Property Price Index (CPPI)



Equity REIT Implied Cap Rates

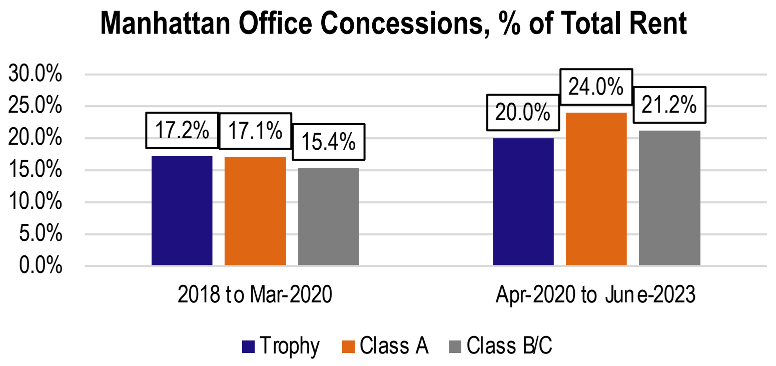


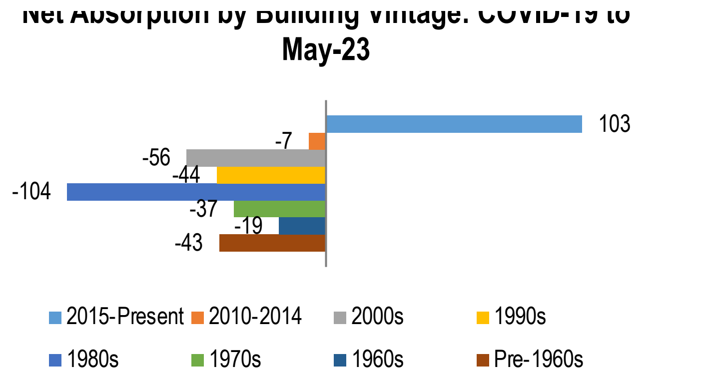
Source: Green Street, FactSet, Real Capital Analytics, and KBW Research.

Office Update – Elevated Vacancies Amid Declining Markets

Vacancy has increased and net absorption has turned negative for the U.S. office sector.

Market	Avg. Asking Rent ($ PSF) 3Q23	% Y/Y Chg., Asking Rent	Vacancy 3Q23	Vacancy, Y/Y Chg. (bps)	Net Absorption, % Total Inventory	YTD Deliveries + SF Under Construction, % Total Inventory
Atlanta	$32	2.70%	23.50%	180	(1.19%)	1.8%
Austin	$46	0.22%	25.40%	360	(2.57%)	10.8%
Boston	$46	5.79%	15.60%	370	(2.42%)	2.2%
Charlotte	$33	0.76%	22.30%	380	(3.71%)	4.2%
Chicago	$34	0.97%	23.70%	250	(1.85%)	0.8%
Columbus	$21	(0.79%)	26.00%	340	(3.12%)	1.7%
Dallas	$30	1.58%	22.90%	250	(0.24%)	3.6%
Denver	$33	1.65%	22.90%	250	(2.14%)	2.0%
Houston	$31	(1.17%)	25.30%	120	(1.05%)	0.5%
Indianapolis	$21	(0.37%)	22.00%	230	(2.01%)	0.5%
Jacksonville	$23	0.00%	19.70%	(120)	1.78%	0.0%
Los Angeles - CBD	$44	(1.94%)	26.60%	420	(4.28%)	0.0%
Los Angeles - Non-CBD	$45	(0.98%)	23.00%	250	(1.28%)	2.3%
Miami	$50	5.66%	15.60%	(60)	0.69%	3.6%
Minneapolis	$28	(0.14%)	26.50%	210	(2.81%)	0.4%
Nashville	$34	3.11%	18.40%	10	2.06%	6.9%
New York - Downtown	$56	(0.48%)	23.90%	190	(2.34%)	0.0%
New York - Midtown	$77	1.74%	21.40%	50	1.59%	2.0%
New York - Midtown South	$76	2.27%	22.40%	110	0.90%	6.4%
Orlando	$27	2.66%	15.20%	190	(1.60%)	1.8%
Philadelphia	$29	2.25%	20.80%	320	(3.20%)	0.7%
Phoenix	$29	2.89%	27.20%	470	(4.20%)	0.9%
Portland	$33	7.04%	20.30%	360	(2.79%)	1.4%
Richmond	$21	2.20%	8.40%	(10)	(0.21%)	1.7%
San Francisco	$33	0.42%	30.40%	730	(6.97%)	0.6%
San Jose	$54	3.17%	16.40%	500	(1.67%)	1.8%
Seattle + Puget Sound	$44	(2.26%)	19.80%	510	(3.38%)	6.6%
Tampa + St. Petersburg	$30	1.19%	20.10%	(40)	(0.13%)	0.6%
Washington DC	$55	(1.10%)	20.00%	110	(1.06%)	0.6%
Average	**$38**	**1.35%**	**21.58%**	**239**	**(1.70%)**	**2.29%**
25th Percentile	**$29**	**(0.43%)**	**24.60%**	**365**	**(2.97%)**	**2.96%**
75th Percentile	**$46**	**2.68%**	**19.75%**	**110**	**(0.23%)**	**0.58%**





Source: Cushman & Wakefield, Avison Young, Cousins Properties (CUZ), and KBW Research.

Office Loss Case Study #1: Illustrates Potential 9% Lender Loss

KBW's Office Case Study #1 shows a 40% decline in office values and 9% loan losses at a 65% LTV at origination.

Scenario	Base case	DSCR with higher mortgage rate, no NOI change	Property price change required to hold DSCR constant	Property price change with NOI decline
Property value	100,000	100,000	66,000	59,400
Mortgage debt	65,000	65,000	42,900	65,000
Borrower equity	35,000	35,000	23,100	(5,600)
LTV	65%	65%	65%	109%
Cap rate	5.50%	5.50%	8.33%	8.33%
NOI	5,500	5,500	5,500	4,950
NOI % change		0.00%	0.00%	-10.00%
Cost of funds	3.50%	7.00%	7.00%	7.00%
Interest expense	2,275	4,550	3,003	4,550
Amortization	2,167	2,167	1,430	2,167
Debt service	4,442	6,717	4,433	6,717
DSCR	1.24x	0.82x	1.24x	0.74x
Property price decline			**-34.0%**	**-40.6%**
Cap rate change			-2.8%	-2.8%
Equity loss			-34.0%	-100.0%
Lender loss			**0.0%**	**-8.6%**

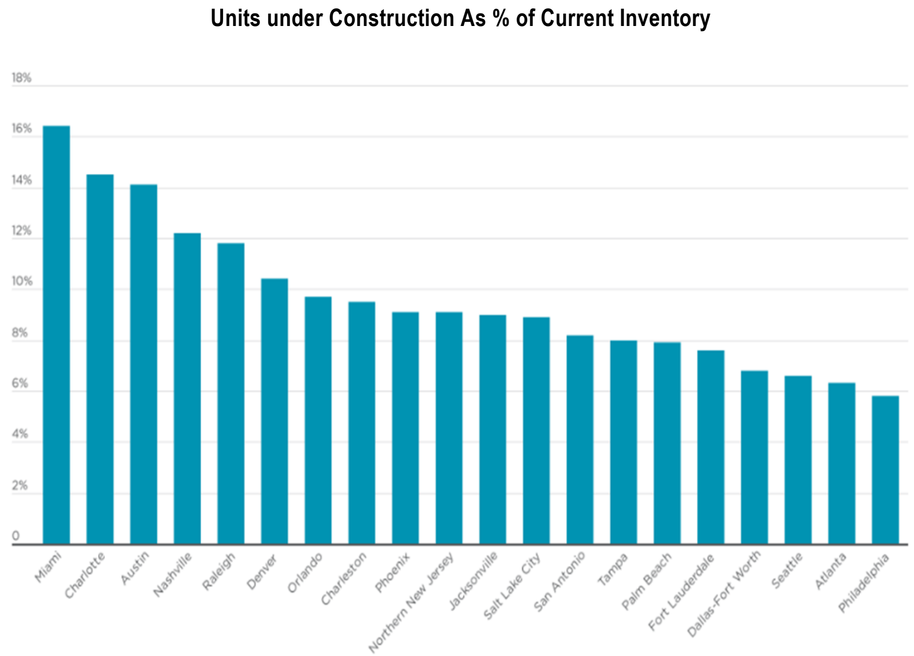
Property values must fall to reestablish DSCR at higher interest rates.

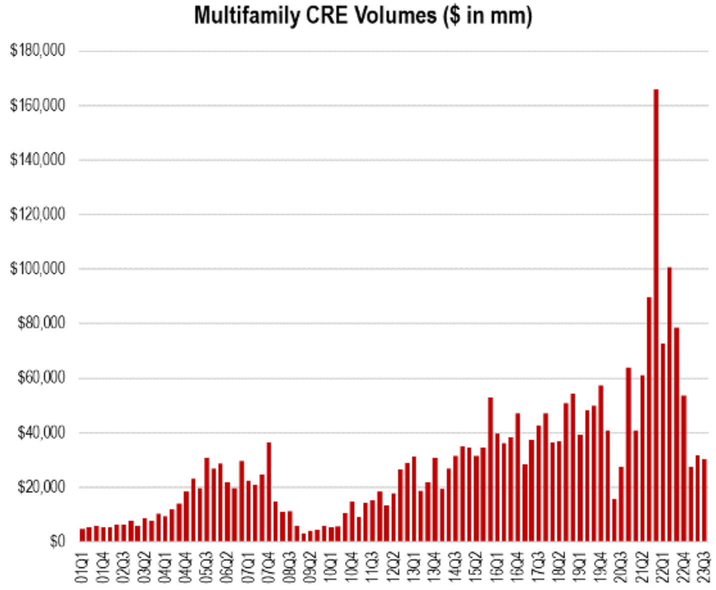
Source: KBW Research.

Multifamily – Volume and Supply Surge Creating Challenges

2021-22 peak multifamily investment sales volumes were unsustainable, driven by record-low rates and optimistic COVID-era rent inflation.

Construction pipelines have surged, concentrated in growth markets.





Source: Cushman & Wakefield Research, CoStar, RCA, and KBW Research.

Sideways: We Expect A Flat Housing and Mortgage Market

Tough Volume Environment Likely to Persist in 2024

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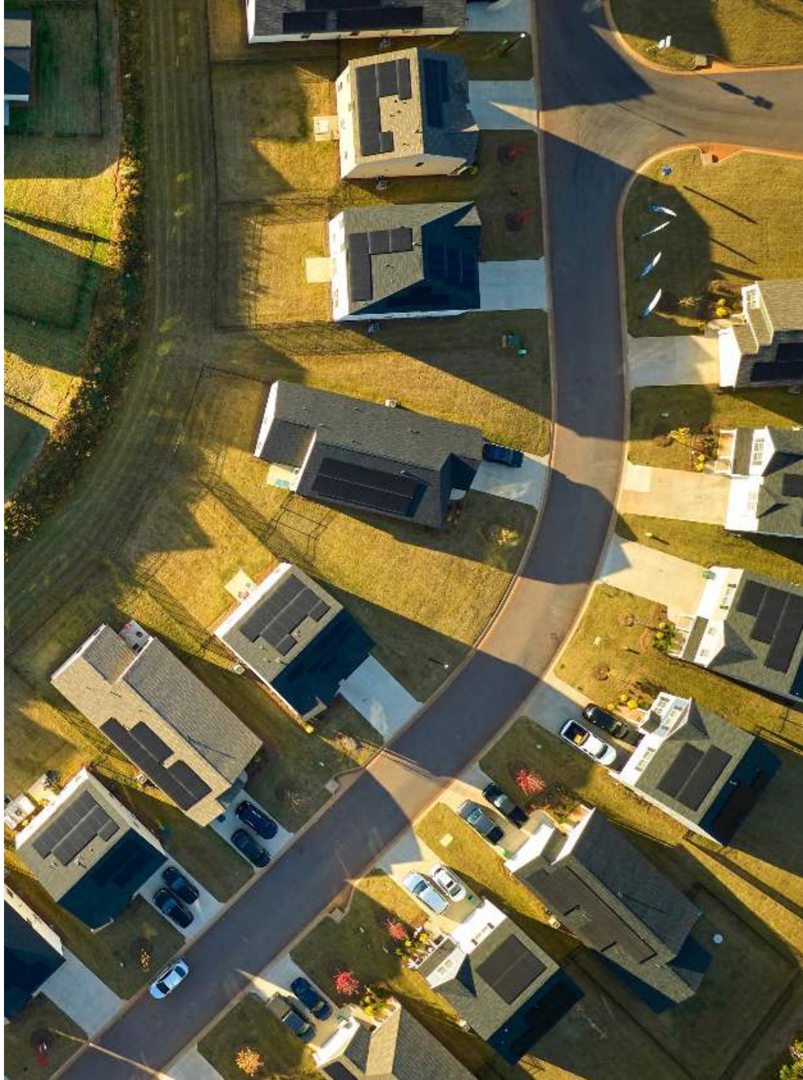


KBW Expects a Sideways Housing and Mortgage Market

- ***Mortgage Rates.*** KBW expects mortgage rates to remain elevated (between 6-6.5% in 2024 and between 5.5%-6% in 2025).

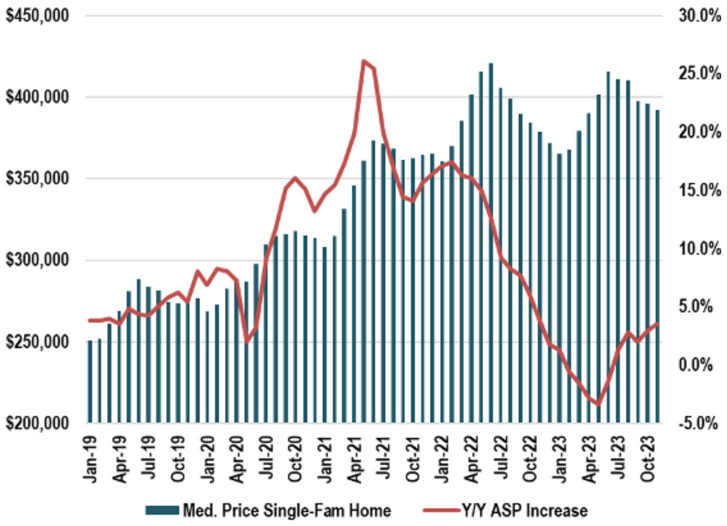
- ***Home Prices.*** KBW's 2024-2025 housing forecast calls for home price growth of just 2% (below wage inflation) and home sales growth of just 2% (a 41-year per capita low).

- ***Housing Shortage.*** Our decomposition of inventory, vacancy, and demographics suggests a housing shortage of 1.5-2.5 million units, below the bulls but firmly in the undersupply camp.

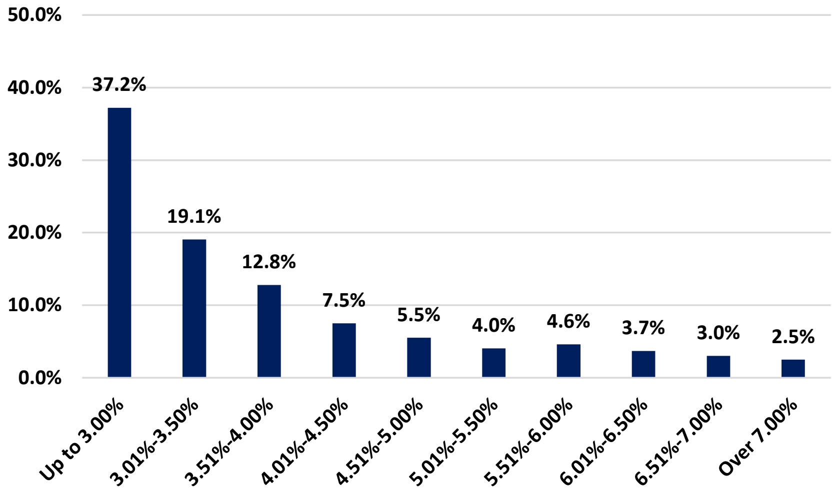
- ***Affordability*** is 30% below the long-run with payment-to-income of 27% compared to 2002-2004's 20%. Alongside lower mortgage rates and 3-4% annual wage growth, we estimate it would take two to three years to normalize affordability.

“Lock-In” Effect – Homeowners Don’t Want to Give Up Low Rate Mortgages. And HPA Has Hurt Affordability.

Home Price Appreciation: 2019-Present



Dispersion of Existing Mortgage Rates



Source: Census, NAR, and KBW Research.

KBW Housing Forecast – We Expect Existing Home Sales to Remain Weak

KBW's 2024-2025 housing forecast calls for home price growth of 2% and home sales growth of 1.6-2.4%.

							Annual % Change						
	Housing Starts			Home Sales			Housing Starts			Home Sales			
Year	Total	Single-Family	Multi-Family	Total	Existing	New	Total	Single-Family	Multi-Family	Total	Existing	New	HPA
2012	781	535	245	5,025	4,656	369	28.2%	24.3%	37.6%	9.5%	8.7%	21.0%	6.4%
2013	925	618	307	5,516	5,087	429	18.5%	15.4%	25.2%	9.8%	9.3%	16.3%	11.8%
2014	1,003	648	356	5,374	4,935	439	8.5%	4.9%	15.7%	(2.6%)	(3.0%)	2.3%	4.6%
2015	1,110	715	396	5,755	5,254	501	10.7%	10.3%	11.3%	7.1%	6.5%	14.1%	5.2%
2016	1,171	782	390	6,013	5,452	561	5.5%	9.4%	(1.5%)	4.5%	3.8%	12.0%	5.1%
2017	1,203	849	354	6,124	5,511	613	2.7%	8.6%	(9.2%)	1.8%	1.1%	9.3%	6.0%
2018	1,250	876	374	5,960	5,343	617	3.9%	3.2%	5.7%	(2.7%)	(3.0%)	0.7%	4.1%
2019	1,290	888	402	6,026	5,344	682	3.2%	1.4%	7.5%	1.1%	0.0%	10.5%	3.3%
2020	1,380	991	389	6,465	5,644	821	7.0%	11.6%	(3.3%)	7.3%	5.6%	20.4%	5.5%
2021	1,601	1,127	474	6,891	6,120	771	16.1%	13.8%	21.9%	6.6%	8.4%	(6.1%)	15.5%
2022	1,559	1,004	555	5,680	5,026	654	(2.6%)	(10.9%)	17.1%	(17.6%)	(17.9%)	(15.2%)	13.5%
2023E	1,395	938	457	4,808	4,121	687	(10.5%)	(6.5%)	(17.7%)	(15.4%)	(18.0%)	5.0%	2.0%
2024E	1,388	985	403	4,884	4,163	721	(0.5%)	5.0%	(11.8%)	1.6%	1.0%	5.0%	2.0%
2025E	1,416	1,035	381	5,003	4,246	757	2.0%	5.0%	(5.3%)	2.4%	2.0%	5.0%	2.0%

Source: Census, National Association of Realtors, S&P Case-Schiller, and KBW Research.

KBW Affordability Forecast – Implies 2-3 Year Timeframe to Normalize

KBW forecasts modest improvement in affordability in 2024

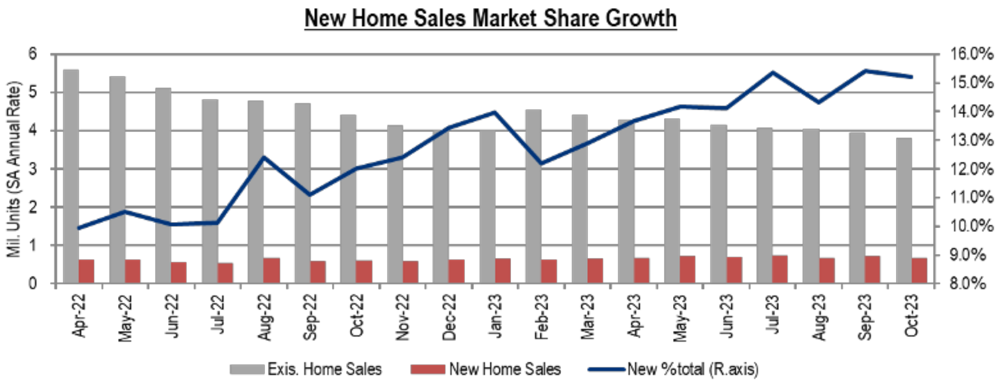
- Home prices +2%
- Income +4%
- 30-year FRM rate of 6.75%
- Home price to income of 3.7
- Mortgage payment (P&I) to income of 24.7%

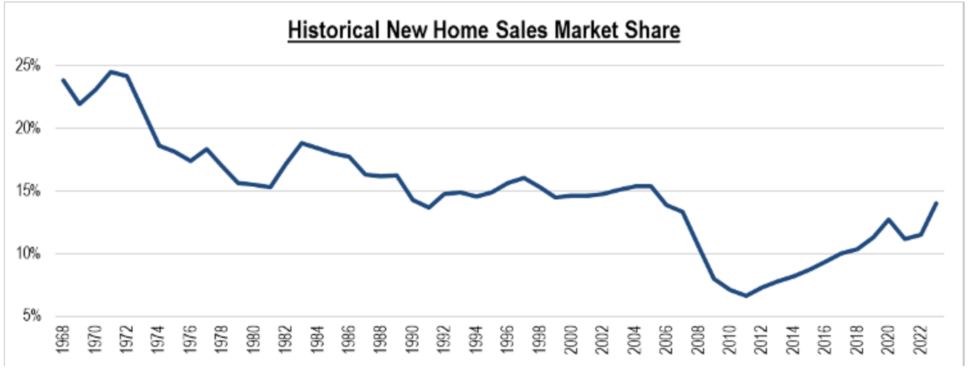
	Med. Price Single-Fam Home	Monthly Mortgage Rate	Princp.& Interest Payment	Family Income	Y/Y ASP Increase (Median)	P&I / Income	Avg. Home Price to Income
1Q22	$385,400	4.24	1515	$86,413	16.3%	21.0%	4.5
2Q22	$420,900	5.60	1933	$87,675	12.6%	26.5%	4.7
3Q22	$389,600	6.18	1905	$95,280	7.7%	24.0%	4.1
4Q22	$372,000	6.36	1869	$98,074	1.8%	22.9%	3.9
1Q23	$379,500	6.54	1943	$96,508	-1.5%	24.2%	4.0
2Q23	$415,700	6.71	2166	$97,401	-1.2%	26.7%	4.2
3Q23	$397,400	7.20	2178	$98,705	2.0%	26.5%	4.0
4Q23E	$388,740	6.82	2050	$99,307	4.5%	24.8%	3.9
2024E	$401,173	6.75	2101	$101,997	2.0%	24.7%	3.7
Y/Y % chg.- full year 2022	10.7%						
Y/Y % chg.- full year 2023	0.7%						

Source: NAR and KBW Research.

New Home Sales Gain Market Share with Tight Existing Inventory

New home sales have gained market share over the past couple years as a result of low existing home inventory and builder sales incentives.



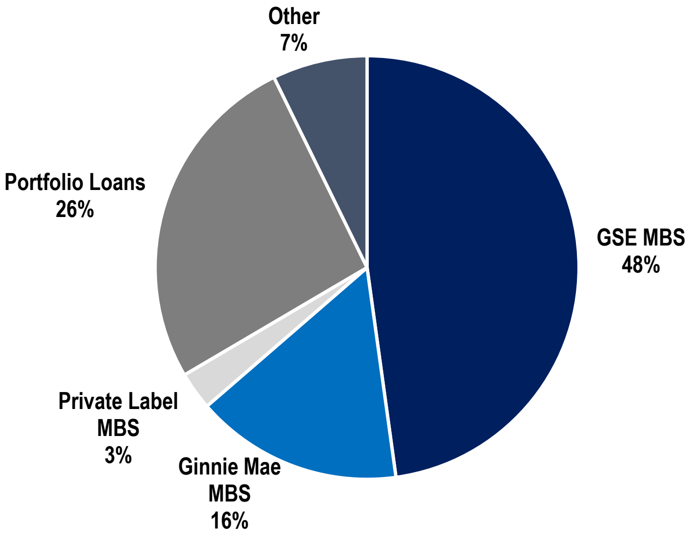


Source: Census, NAR, and KBW Research.

Mortgage Rates are Largely Set by Capital Markets

Because ~65% of mortgage production is through the GSEs or Ginnie Mae, mortgage rates are largely set by the capital markets.

Mortgage Debt Outstanding Breakdown



Source: Federal Reserve and KBW Research.

Mortgage Rates Likely to Remain Elevated, but Should Be Modest Tailwind

Since 2022, rates are up sharply both on a higher 10-yr and on a spike in agency MBS spreads as the Fed stopped purchasing agency MBS and is now running off its portfolio.

We expect the 30-year fixed-rate mortgage (FRM) to trend down in 2024 and 2025 but not fall much below 6%

KBW Mortgage Rate & Spread Outlook

	2019	2020	2021	2022	Current	2024E	2025E
30Yr Fixed Mortgage Rate	**3.74%**	**2.67%**	**3.11%**	**6.42%**	**6.60%**	**6.30%**	**5.90%**
10Yr UST Yield	1.92%	0.91%	1.51%	3.87%	4.14%	4.00%	3.75%
Spread	1.82%	1.76%	1.60%	2.55%	2.46%	2.30%	2.15%
Agency MBS Yield	2.71%	1.35%	2.06%	5.37%	5.53%	5.25%	4.85%
Agency MBS Spread	0.79%	0.44%	0.55%	1.50%	1.39%	1.25%	1.10%
Primary-Secondary Spread	1.03%	1.32%	1.05%	1.05%	1.07%	1.05%	1.05%

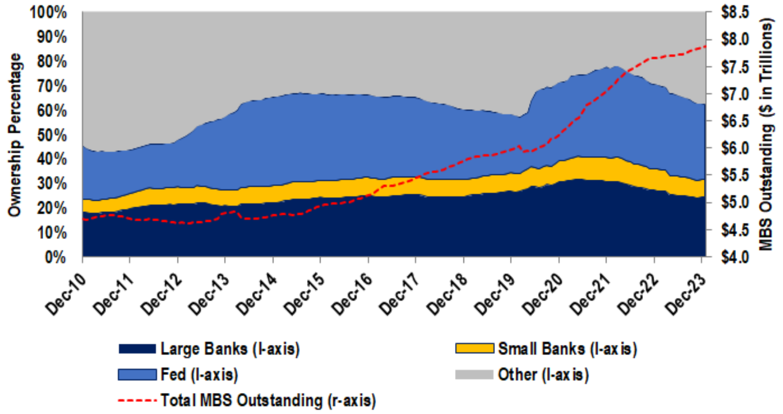
Source: Freddie Mac, Bloomberg, and KBW Research.

Agency MBS Spreads Should Tighten in 2024, But Only Slightly

Agency spreads remain wide at ~140 bp vs the 10 yr UST, but should grind tighter, albeit modestly, in 2024.

Agency MBS Spread vs. 10Yr UST Yield

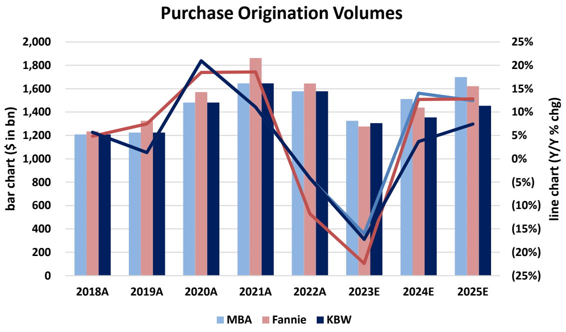
Bank vs. Fed Ownership of Agency MBS

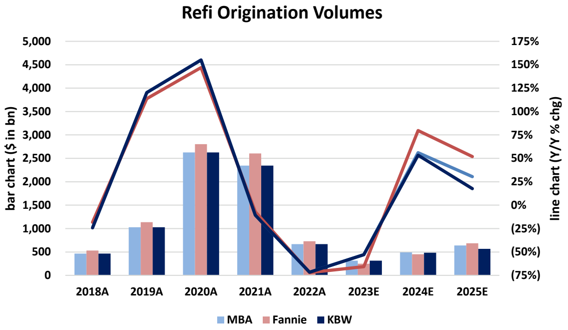


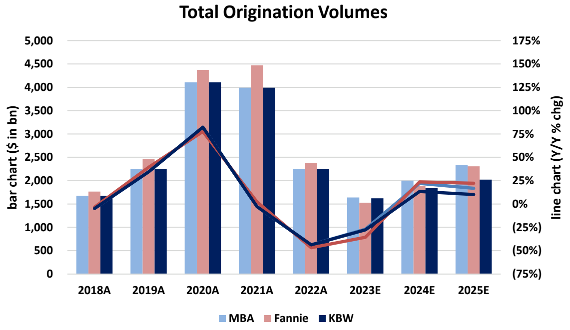
Source: Freddie Mac, Bloomberg, and KBW Research.

We Expect Mortgage Volumes to Improve Modestly in 2024

The MBA expects total origination volume to increase 22% Y/Y in 2024 and grow 17% Y/Y in 2025. The KBW Housing Baseline is expects volumes to improve at a more moderate pace, as we believe volumes will increase 13% Y/Y in 2024 and 10% Y/Y in 2025.

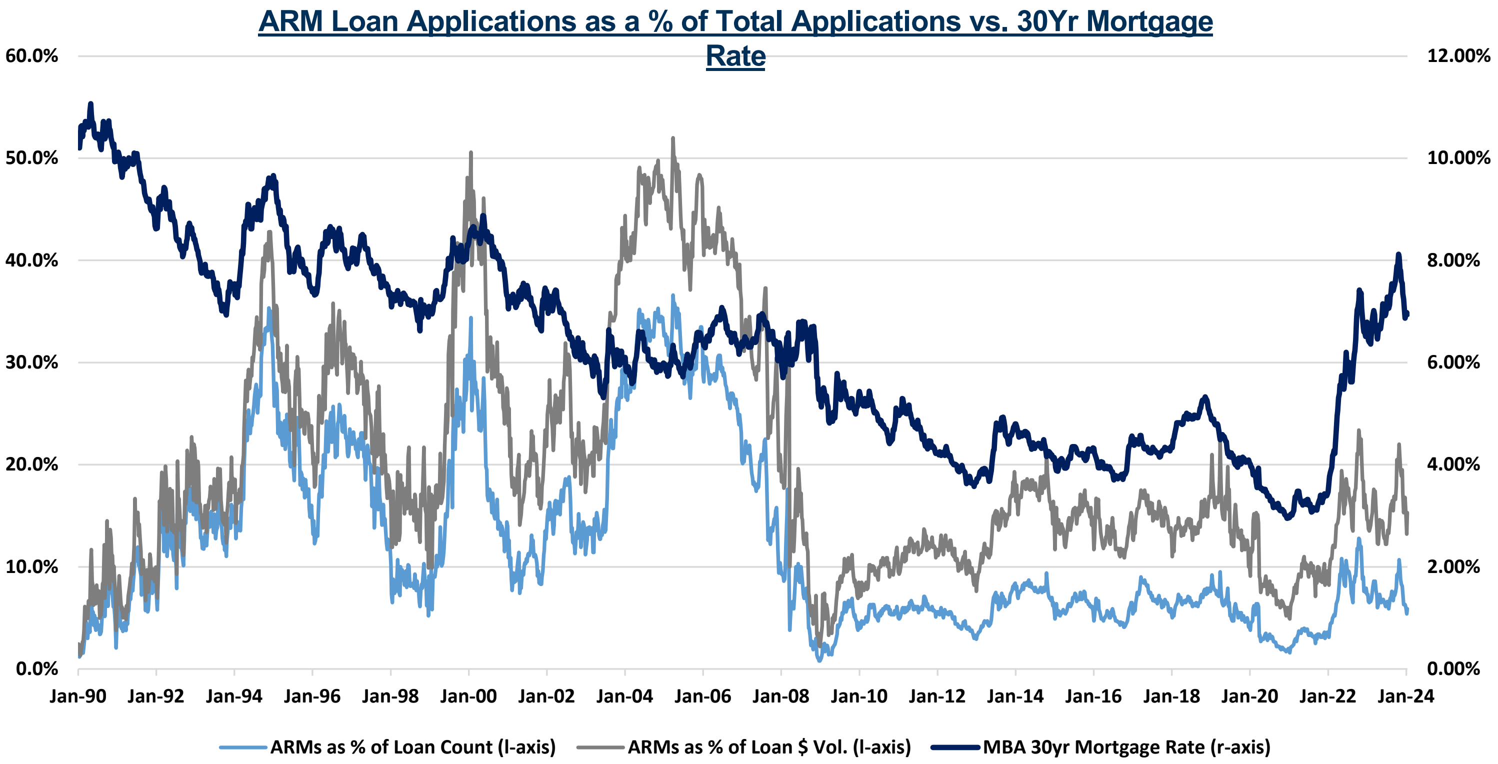






Note: Y-axis scales kept unchanged in all three charts to show differences in the variability of purchase versus refinance.
Source: Mortgage Bankers Association (MBA), Fannie Mae, Freddie Mac, and KBW Research.

Could Adjustable Rate Mortgages (ARMs) Be a Partial Solution?

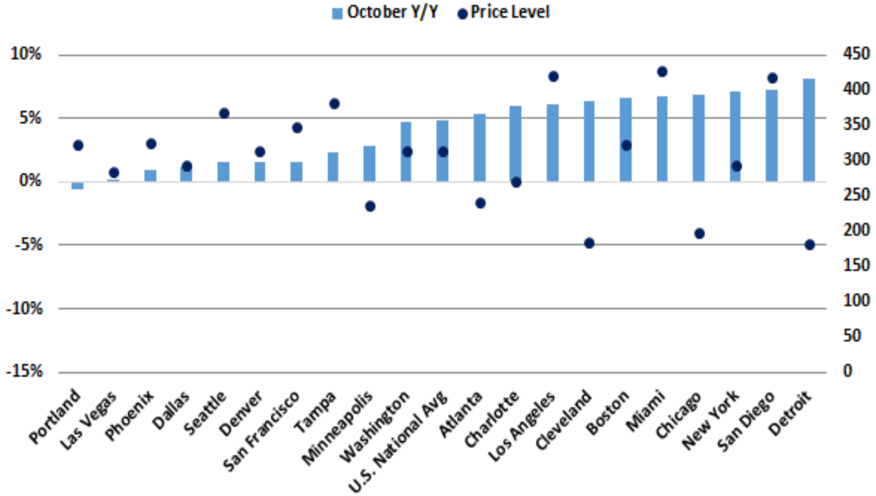


Source: Mortgage Bankers Association (MBA), Company reports, and KBW Research.

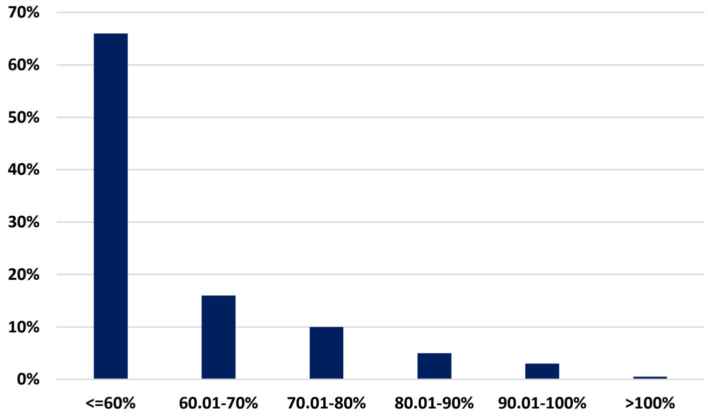
Residential Mortgage Credit Trends Remain Strong Supported by Stable Home Prices

- Home prices now up 1.5% from previous June 2022 peak, 6.9% from January 2023 bottom
- Home price trends have resulted in considerable reduction in MTM LTV

October HPA Y/Y by Metro Area (l-axis) vs. Price Level (r-axis)



Fannie Mae Single-Family Guaranty Book of Business by MTM LTV Ratio (as of YE2022)



Source: S&P Dow Jones Indices, CoreLogic, and KBW Research.

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Looking Ahead: Where Do the Banks Go from Here?

Analyzing the ROTCE Potential Across the Banking Industry

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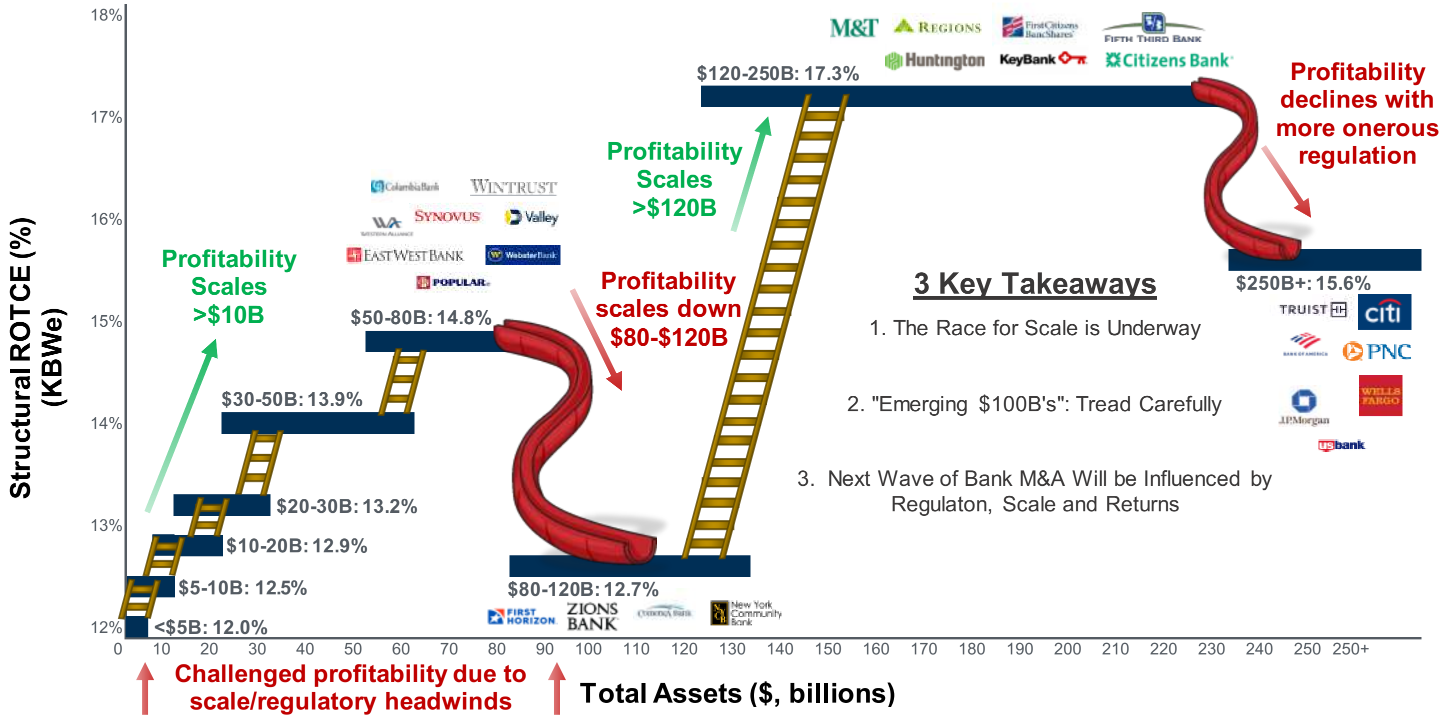
Chutes and Ladders – Bank Profitability Scales Up (and Down) with Asset Size



Chutes and Ladders – Bank Profitability Scales Up (and Down) with Asset Size

Investment Thesis: Our Three Key Takeaways

1. ***The Race for Scale Is Underway***
   - **Market View:** Investors rewarding scale and penalizing lack of scale
   - **KBW View:** Distance yourself from $10B, own $50B-$80Bs, and re-evaluate at $80B

2. ***"Emerging $100Bs": Tread Carefully***
   - **Market View:** Avoid all banks in this regulatory "no fly zone" around $100B
   - **KBW View:** Seek select exposure where differences in Structural ROTCEs not fully reflected in valuations

3. ***Next Wave of Bank M&A Will Be Influenced by Regulation, Scale, and Returns***
   - **Market View:** M&A can't resume until regulatory environment thaws
   - **KBW View:** M&A must occur given regulatory burden and scale demands

Structural ROTCE – Estimating Long-Term (Normalized) Profitability

- ***Our Analysis Estimates the Long-Term, Normalized Profitability of Each Bank***
- ***We Isolate and Sensitize Three Key Variables Within the ROTCE Construct – NII, Expenses, Capital***

Positively impacted by regulation

$$\text{TROTCE} = \frac{\text{NII}}{\text{Tang. Assets}} + \frac{\text{Noninterest Income}}{\text{Tang. Assets}} \times \text{1 - (Expenses / Revenues)} - \frac{\text{Provision Exp.}}{\text{Tang. Assets}} \times \text{1 - Tax Rate} \div \text{TCE/TA}$$

Negatively impacted by regulation

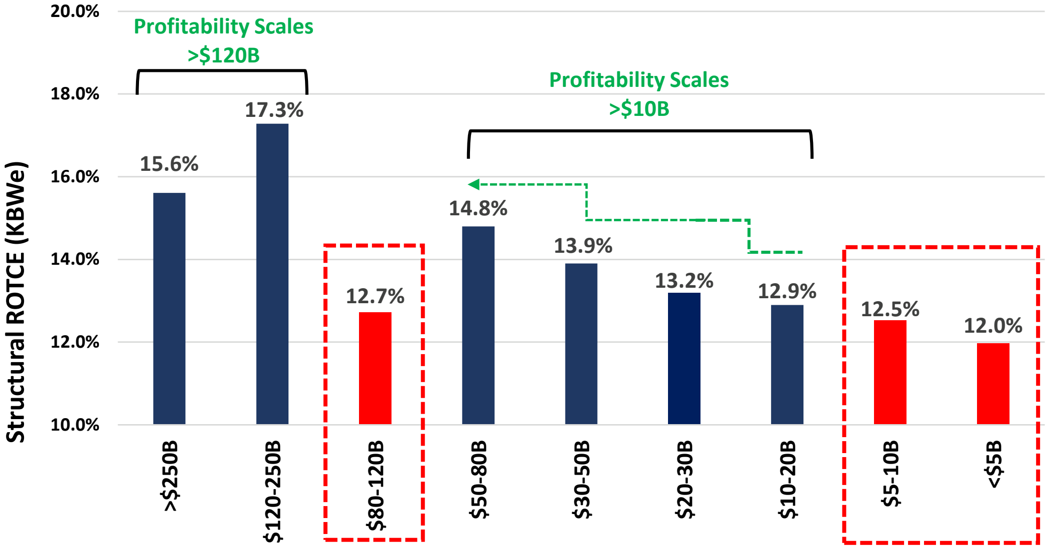
Negatively impacted by regulation

Note – NII = Net interest income.
Source: KBW Research.

Profitability Scales Up…and Down

Key Takeaways

- Profitability Scales Up After $120B, but Scales Down Between $80B-$120B
- A Clear Stair Step-Up in Profitability as Banks Distance From $10B
- Smallest Banks (<$10B) Have Lowest Profitability

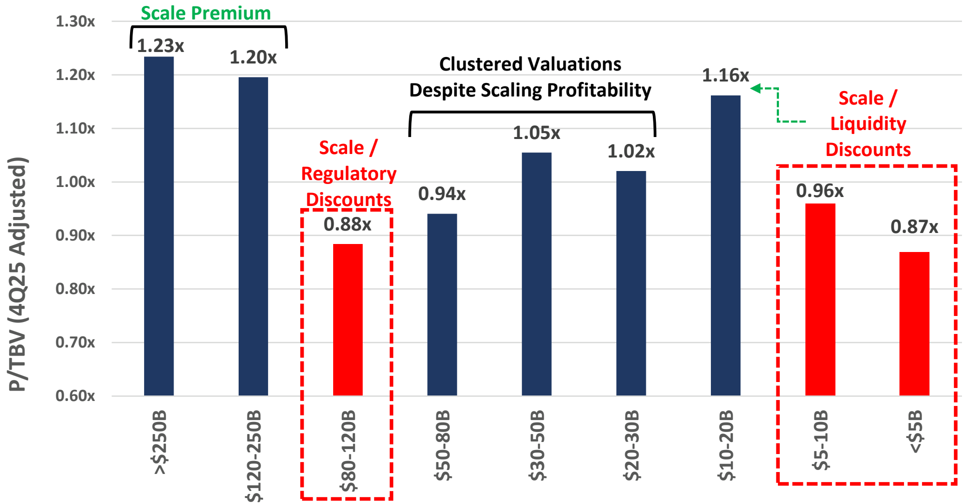


Note – Structural ROTCE is KBWe and represents long-term return potential (inclusive of proposed regulation/implications), not a specific year, and excludes impact from accretion income.
Source: KBW Research and S&P Capital IQ.

Valuation Scales Up…and Down, Too

Key Takeaways

- **Largest Banks** – 35-40% Scale Premium vs. $80B-$120B Banks
- **Smallest Banks** – Lowest Valuations Align With Lowest Profitability
- **Clustered Valuations in the Middle** – Despite Scaling Profitability From $10B-$80B



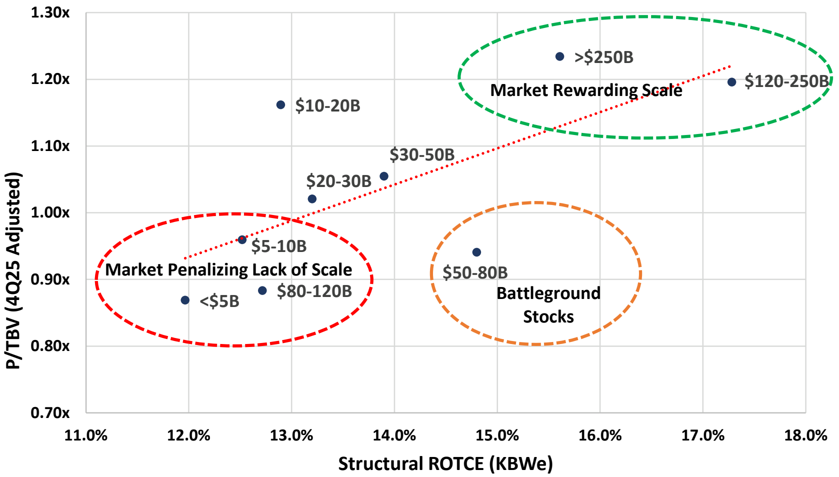
Note – P/TBV multiple uses YE25 TBV/share and normalizes capital levels based on estimated long-term targets for the largest banks (Emerging banks up through Category I banks) based on proposed regulatory capital changes impacting banks $100B in assets and higher.
Source: KBW Research and S&P Capital IQ.

The Market Rewarding Scale and Penalizing Lack of Scale

Key Takeaways

- **The Market Is Rewarding Scale** – Banks >$250B and $120B-$250B
- **The Market Is Penalizing Lack of Scale** – Banks <$10B and $80B-$120B
- **Battleground Stocks** – Banks $50B-$80B trade cheap to Structural ROTCE, but $100B on horizon

Structural ROTCE vs. P/TBV (4Q25E Adjusted)

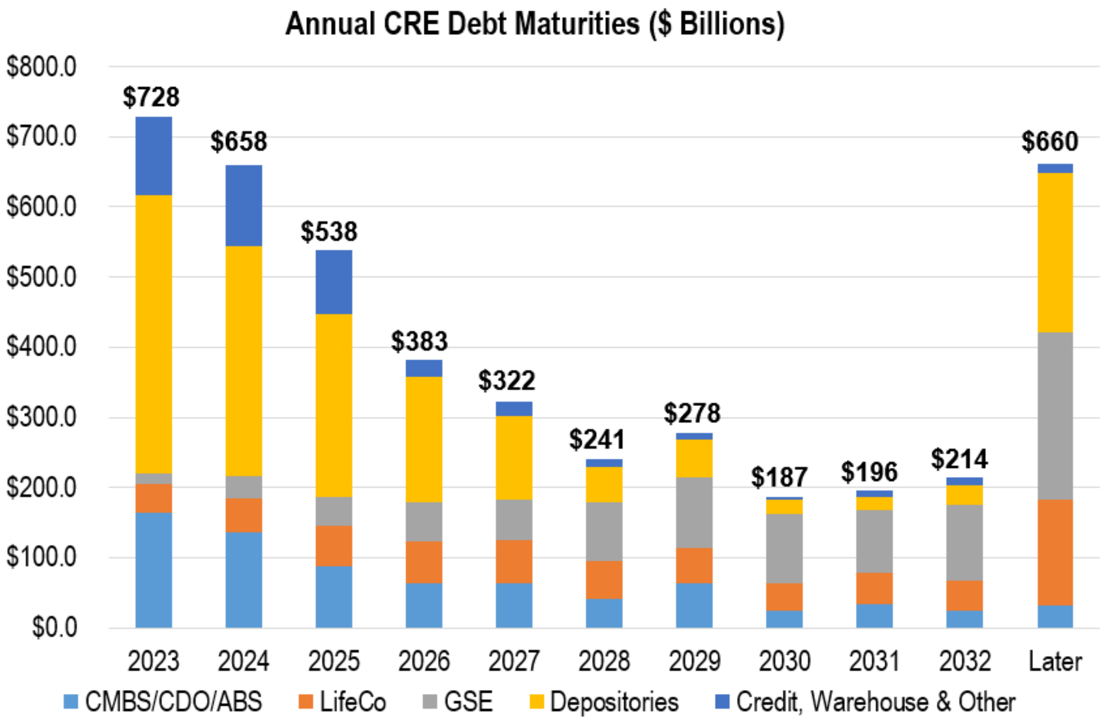


Note – Structural ROTCE is KBWe and represents long-term return potential (inclusive of proposed regulation/implications), not a specific year, and excludes the impact of accretion income. P/TBV multiple uses YE25 TBV/share and normalizes capital levels based on estimated long-term targets for the largest banks (Emerging banks up through Category I banks) based on proposed regulatory capital changes impacting banks $100B in assets and higher. Source: KBW Research and S&P Capital IQ.

Appendix

CRE Debt Maturities of $1.2 Trillion in 2024-2025

Includes $497bn of multifamily and $207bn of office



Source: Mortgage Bankers Association (MBA) and KBW Research.

CRE Credit Trends: Banks and CMREIT Reserves Increase

3Q23 CECL reserves totaled 2.33% and NPLs were 1.71% of CRE loans for major CRE banks (+23 bps and +50 bps Q/Q), and 2.74% and 5.26% for commercial mortgage REITs (CMREITs) (+17 bps and -16 bps Q/Q).

	3Q23 CRE Loan Portfolio			2Q23 CRE Loan Portfolio			1Q23 CRE Loan Portfolio			3Q23 % chg. Q/Q		2Q23 % chg. Q/Q	
	CECL reserve	NPLs or NAs	CRE loans	CECL reserve	NPLs or NAs	CRE loans	CECL reserve	NPLs or NAs	CRE loans	CECL reserve	NPLs or NAs	CECL reserve	NPLs or NAs
Banks													
WFC	2.52%	2.53%	152,486	2.35%	1.63%	154,276	1.76%	0.94%	154,707	0.17%	0.91%	0.59%	0.69%
BAC	1.90%	1.83%	73,193	1.80%	1.10%	74,290	1.72%	0.69%	73,051	0.10%	0.74%	0.08%	0.41%
USB	3.10%	1.33%	54,131	2.70%	0.52%	54,357	2.50%	0.97%	55,158	0.40%	0.81%	0.20%	-0.45%
MTB	1.82%	3.16%	43,574	1.71%	3.43%	44,649	1.65%	3.69%	45,073	0.10%	-0.27%	0.07%	-0.26%
PNC	3.55%	2.02%	35,776	3.36%	0.97%	35,928	3.25%	0.94%	35,991	0.19%	1.05%	0.11%	0.04%
CFG	2.35%	1.59%	29,486	1.87%	1.22%	28,947	1.67%	0.48%	28,999	0.48%	0.38%	0.20%	0.73%
KEY	2.20%	0.34%	18,531	1.89%	0.35%	18,694	1.30%	0.31%	18,938	0.31%	-0.01%	0.59%	0.04%
FHN	1.19%	0.89%	14,121	1.14%	0.53%	13,891	1.12%	0.47%	13,397	0.05%	0.36%	0.02%	0.06%
Avg. / total	**2.33%**	**1.71%**	**421,298**	**2.10%**	**1.22%**	**425,032**	**1.87%**	**1.06%**	**425,314**	**0.23%**	**0.50%**	**0.23%**	**0.16%**
CMREITs													
BXMT	1.95%	5.87%	23,716	1.49%	4.43%	24,483	1.35%	4.01%	24,896	*0.47%*	*1.43%*	*0.13%*	*0.43%*
STWD	1.57%	3.59%	15,130	1.51%	4.49%	15,686	0.73%	3.84%	16,213	*0.06%*	*-0.90%*	*0.78%*	*0.65%*
ABR	1.40%	1.20%	13,122	1.26%	0.93%	13,391	1.12%	0.06%	13,644	*0.14%*	*0.27%*	*0.14%*	*n/a*
ARI	2.68%	8.27%	8,228	2.71%	8.54%	8,328	1.89%	4.59%	8,681	*-0.03%*	*-0.27%*	*0.82%*	*3.96%*
KREF	2.96%	7.28%	7,565	2.99%	7.34%	7,487	2.20%	4.53%	7,612	*-0.03%*	*-0.05%*	*0.79%*	*2.81%*
CMTG	1.97%	6.99%	7,186	1.37%	6.26%	7,560	1.68%	7.45%	7,611	*0.60%*	*0.74%*	*-0.31%*	*-1.19%*
FBRT	0.76%	1.13%	4,951	0.77%	0.40%	5,063	0.57%	1.65%	5,052	*-0.01%*	*0.73%*	*0.20%*	*-1.25%*
TRTX	5.37%	8.01%	3,970	5.48%	11.97%	4,567	4.10%	11.19%	4,916	*-0.11%*	*-3.96%*	*1.38%*	*0.78%*
LADR	1.17%	1.73%	3,381	0.92%	2.53%	3,513	0.67%	1.41%	3,810	*0.25%*	*-0.80%*	*0.25%*	*1.12%*
GPMT	4.98%	8.60%	2,918	4.20%	8.20%	3,105	3.87%	8.28%	3,321	*0.78%*	*0.40%*	*0.33%*	*-0.08%*
BRSP	2.88%	1.76%	3,110	3.31%	2.21%	3,226	4.17%	3.59%	3,495	*-0.42%*	*-0.45%*	*-0.86%*	*-1.37%*
ACRE	5.16%	8.64%	2,180	4.85%	7.67%	2,228	4.03%	7.97%	2,173	*0.30%*	*0.97%*	*0.83%*	*-0.31%*
Avg. / total	**2.74%**	**5.26%**	**95,457**	**2.57%**	**5.41%**	**98,636**	**2.20%**	**4.88%**	**101,424**	***0.17%***	***-0.16%***	***0.37%***	***0.50%***

Source: Company reports and KBW Research.

CMREITs – Analysis Illustrates Market Loss Expectations

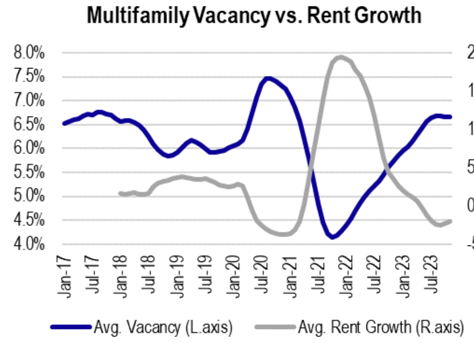
Valuing the CMREITs using a required dividend yield of 10-11% implies a P/B multiple of 0.85x to 0.95x, a 5-15% discount. In the three scenarios below, we assume market P/B multiples of 0.8-0.9x. We believe that the additional discount of 5% in excess of required dividend yield is accounting for credit loss, leverage, and a liquidity cushion. Adding this to existing CECL reserves implies cumulative loan losses of 2% to 4%.

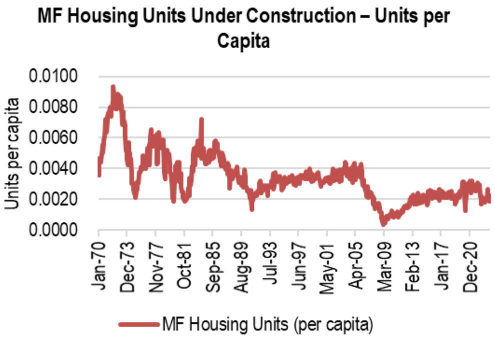
Implied cum. loss %	Bull Case	Base Case	Bear Case
Leverage (debt/equity)	2.50x	3.00x	4.50x
Current dividend	$1.94	$1.90	$1.45
Book value	$22.86	$20.00	$14.55
Return on equity	8.50%	9.50%	10.00%
Required dividend yield	10.08%	11.08%	10.58%
Implied stock price at required yield	$19.28	$17.16	$13.75
Implied P/B at required dividend yield	0.84x	0.86x	0.95x
Price decline from BV	**-15.6%**	**-14.2%**	**-5.4%**
Current stock price	$20.57	$17.00	$11.64
Current P/BV	0.90x	0.85x	0.80x
Price decline from BV	-10.0%	-15.0%	-20.0%
Price decline attributable to credit loss & liquidity	**6.7%**	**-0.9%**	**-15.4%**
Liquidity cushion	(80)	10	132
***Assumes 50% of gap between current stock price and higher dividend yield is liquidity cushion*			
Cumulative loan losses			
$ magnitude of equity loss	(80)	10	132
Current CECL reserve	260	260	260
Total cum. loss	180	270	392
Implied cum. loan loss % of loans	**-1.8%**	**-2.7%**	**-3.9%**

Source: Company reports and KBW Research.

Multifamily Update – Surging Inventory, Falling Rents

Rent growth has slowed and vacancy has increased since the 2022 peak. For 30 key markets, rent growth was ~20% in Jan-22 vs. -2% in Nov-23. Vacancy bottomed at 4.1% Oct-21 vs. 6.7% today. Supply continues to expand, with 3Q23 LTM deliveries avg. 3.8% of inventory and over 5% in some markets.





Market	Nov-23 Rent Growth Y/Y	Jan-22 Rent Growth Y/Y	*Peak-to-Trough Rent Growth Chg. bps*	Occupancy Nov-23	*Occupancy Chg. Y/Y*	*3Q23 LTM Deliveries as % of Inventory*	2023 Population Growth
Atlanta	-5.8%	17.4%	-2,320	92.28%	-155	2.60%	1.42%
Austin	-6.2%	24.7%	-3,090	91.15%	-199	6.50%	2.06%
Boston	2.8%	24.1%	-2,130	94.25%	-76	1.50%	0.53%
Charlotte	-2.3%	20.2%	-2,250	92.61%	-74	4.80%	2.86%
Chicago	2.1%	15.8%	-1,370	93.98%	-77	NA	0.53%
Cleveland	0.9%	8.6%	-770	94.20%	-146	NA	0.17%
Columbus	0.6%	10.8%	-1,030	93.83%	-185	NA	1.24%
Dallas-Fort Worth	-2.2%	18.5%	-2,070	92.39%	-128	3.00%	1.23%
Denver	-0.9%	16.8%	-1,770	92.44%	-141	3.10%	1.09%
Houston	-0.3%	11.8%	-1,210	92.40%	-80	2.20%	1.58%
Jacksonville	-3.6%	26.1%	-2,970	93.38%	-72	6.10%	1.22%
Las Vegas	-2.5%	27.7%	-3,030	93.20%	-23	NA	1.86%
Los Angeles	-6.4%	16.2%	-2,250	94.98%	-57	2.30%	0.51%
Miami	-1.7%	26.4%	-2,810	93.98%	-128	3.10%	0.83%
Milwaukee	3.3%	9.6%	-630	93.61%	-35	NA	0.48%
Minneapolis	-0.6%	6.0%	-650	90.37%	-4	3.70%	0.80%
Nashville	-3.8%	21.5%	-2,520	91.81%	-224	7.00%	1.62%
New York	2.2%	33.6%	-3,140	96.77%	-19	1.30%	0.51%
Orlando	-4.4%	29.7%	-3,410	93.33%	-128	6.30%	1.62%
Philadelphia	-0.9%	15.4%	-1,630	94.01%	-10	2.30%	0.62%
Phoenix	-4.2%	27.7%	-3,190	93.21%	-42	3.90%	1.27%
Portland	-6.1%	10.0%	-1,610	92.44%	-169	NA	1.05%
Raleigh-Durham	-3.2%	21.1%	-2,440	93.14%	-142	NA	2.84%
Sacramento	-3.5%	15.3%	-1,880	94.32%	-69	NA	1.33%
Salt Lake City	-3.0%	18.6%	-2,150	91.56%	-187	7.30%	0.92%
San Francisco	-6.7%	16.9%	-2,360	94.76%	-23	NA	0.45%
Seattle	-1.2%	20.4%	-2,160	94.14%	-19	3.00%	0.86%
Tampa	-2.0%	29.7%	-3,170	93.27%	-95	NA	1.09%
Washington D.C.	2.3%	14.0%	-1,170	94.79%	2	2.60%	1.00%
Average	**(2.0%)**	**19.1%**	***-2,110***	**93.3%**	***-93***	***3.8%***	**1.2%**
25th Percentile	**(4.0%)**	**14.7%**	***-2,890***	**92.4%**	***-144***	***6.1%***	**0.6%**
75th Percentile	**0.1%**	**25.4%**	***-1,490***	**94.2%**	***-29***	***2.3%***	**1.5%**

Source: CBRE, apartment List, Yardi Matrix, Macrotrends, Federal Reserve, and KBW Research.

CMREITs CECL Reserve Scenario – Analysis Shows Book Value Risk

Our scenario analysis (base case & stress) suggests a 70-120% increase in CECL reserves and 4-8% decrease in book value for the Commercial Mortgage REITs.

- This suggests downside risks to stocks on lower book values and multiples (historical trough of 0.5-0.6x vs. current 0.8x).

	ABR	ACRE	ARI	BXMT	CMTG	GPMT	KREF	LADR	RC	STWD	BRSP	FBRT	TRTX	Average
Portfolio Metrics														
Loan portfolio	$13,122	$2,180	$8,001	$23,716	$7,186	$2,918	$7,755	$3,381	$9,815	$15,130	$3,110	$4,951	$3,970	**$8,357**
Risk 4-5 rated loans	$685	$463	$762	$4,357	$1,291	$579	$1,187	$153	$1,285	$1,500	$609	$83	$638	**$1,126**
Current Portfolio, % Risk 4-5 Rated Loans	*5.2%*	*21.2%*	*9.5%*	*18.4%*	*18.0%*	*19.8%*	*15.3%*	*4.5%*	*13.1%*	*9.9%*	*19.6%*	*1.7%*	*16.1%*	***14.2%***
CECL reserve	$184	$112	$220	$463	$142	$145	$219	$40	$100	$271	$89	$38	$213	**$183**
% of loan portfolio	*1.4%*	*5.2%*	*2.8%*	*2.0%*	*2.0%*	*5.0%*	*2.8%*	*1.2%*	*1.0%*	*1.8%*	*2.9%*	*0.8%*	*5.4%*	***2.8%***
% of book value	*7.3%*	*16.5%*	*10.8%*	*10.4%*	*6.2%*	*21.2%*	*19.4%*	*2.3%*	*4.0%*	*4.0%*	*5.9%*	*2.9%*	*22.8%*	***10.9%***
CECL reserve, % Risk 4-5 Rated Loans	*26.9%*	*24.3%*	*28.9%*	*10.6%*	*11.0%*	*25.1%*	*18.5%*	*25.9%*	*7.8%*	*18.1%*	*14.6%*	*45.4%*	*33.4%*	***20.4%***
Office, % of Portfolio	0.6%	39.0%	19.0%	36.0%	17.0%	43.7%	24.9%	23.7%	5.0%	23.1%	32.5%	5.6%	23.9%	***24.0%***
Book Value Per Share	$12.28	$12.62	$14.45	$25.90	$16.25	$13.28	$16.29	$13.77	$14.42	$21.15	$11.55	$15.76	$12.04	**$15.33**
CECL Reserve Analysis - Base Case Scenario														
Expected Office Loans Risk Rated 4-5	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	**35.0%**
Expected Non-Office Loans Risk Rated 4-5	12.5%	15.0%	20.0%	15.0%	20.0%	15.0%	15.0%	10.0%	20.0%	15.0%	15.0%	15.0%	15.0%	**15.6%**
Expected Total Loans Risk Rated 4-5	**12.6%**	**22.8%**	**22.9%**	**22.2%**	**22.6%**	**23.7%**	**20.0%**	**15.9%**	**20.7%**	**19.6%**	**21.5%**	**16.1%**	**19.8%**	**20.4%**
Increase in risk 4-5 rated loans from current portfolio	7.4%	1.6%	13.3%	3.8%	4.6%	3.9%	4.7%	11.4%	7.7%	9.7%	1.9%	14.4%	3.7%	**6.1%**
Increase in CECL Reserve from current reserve	**$261**	**$8**	**$308**	**$97**	**$36**	**$29**	**$67**	**$100**	**$59**	**$265**	**$9**	**$325**	**$49**	**$107**
% Increase in CECL Reserve	***142%***	***7%***	***140%***	***21%***	***25%***	***20%***	***31%***	***252%***	***58%***	***98%***	***10%***	***865%***	***23%***	***69%***
Per share	***$1.28***	***$0.15***	***$2.18***	***$0.56***	***$0.26***	***$0.55***	***$0.97***	***$0.79***	***$0.34***	***$0.82***	***$0.07***	***$3.91***	***$0.64***	***$0.72***
% of book value	***10.4%***	***1.2%***	***15.1%***	***2.2%***	***1.6%***	***4.2%***	***5.9%***	***5.7%***	***2.4%***	***3.9%***	***0.6%***	***24.8%***	***5.3%***	***4.9%***
Total CECL Reserve % of loans	***3.4%***	***5.5%***	***6.6%***	***2.4%***	***2.5%***	***6.0%***	***3.7%***	***4.1%***	***1.6%***	***3.5%***	***3.1%***	***7.3%***	***6.6%***	***4.1%***
CECL Reserve Analysis - Stress Case Scenario														
Existing CECL Reserve on risk 4-5 rated loans	26.9%	24.3%	28.9%	10.6%	11.0%	25.1%	18.5%	25.9%	7.8%	18.1%	14.6%	45.4%	33.4%	**20.4%**
Increase in risk 4-5 rated loans (Base Case Scenario)	7.4%	1.6%	13.3%	3.8%	4.6%	3.9%	4.7%	11.4%	7.7%	9.7%	1.9%	14.4%	3.7%	**6.1%**
Expected CECL reserve on risk 4-5 rated loans	27.5%	20.0%	20.0%	15.0%	20.0%	28.5%	15.0%	20.0%	25.0%	15.0%	20.0%	20.0%	20.0%	**20.5%**
Add'l Increase in CECL Reserve	**$11**	**$0**	**$0**	**$230**	**$146**	**$24**	**$0**	**$0**	**$350**	**$0**	**$36**	**$0**	**$0**	**$66**
Cumulative increase in CECL Reserve: Base + Stress	**$272**	**$8**	**$308**	**$326**	**$182**	**$52**	**$67**	**$100**	**$409**	**$265**	**$45**	**$325**	**$49**	**$174**
% Increase in CECL Reserve	***148%***	***7%***	***140%***	***70%***	***129%***	***36%***	***31%***	***252%***	***407%***	***98%***	***50%***	***865%***	***23%***	***116%***
Per share	***$1.33***	***$0.15***	***$2.18***	***$1.89***	***$1.29***	***$1.01***	***$0.97***	***$0.79***	***$2.38***	***$0.82***	***$0.34***	***$3.91***	***$0.64***	***$1.15***
% of book value	***10.8%***	***1.2%***	***15.1%***	***7.3%***	***7.9%***	***7.6%***	***5.9%***	***5.7%***	***16.5%***	***3.9%***	***3.0%***	***24.8%***	***5.3%***	***7.5%***
Total CECL Reserve % of loans	***3.5%***	***5.5%***	***6.6%***	***3.3%***	***4.5%***	***6.8%***	***3.7%***	***4.1%***	***5.2%***	***3.5%***	***4.3%***	***7.3%***	***6.6%***	***4.8%***

Note: Figures are as of 3Q23. Excludes NREF, which does not have office exposure. Includes BRSP, FBRT, and TRTX which are not covered companies. Averages exclude FBRT. Analysis shows hypothetical reserve impact based on generic scenario assumptions.
Source: Company reports; KBW Research.

KBW's Recession Case CRE Loan Loss Framework

Factoring in the risk of a moderate to severe recession, our potential loss rates would roughly double to 3.0-6.0% based on the assumptions below:

- **Peak delinquencies of 10-12%, default probabilities of 50-75%, and loss severities of 30-50%.**

Basic Loss Framework:

	Low	High	Avg.
Delinquency rate	10.0%	12.0%	11.0%
Default probability	50.0%	75.0%	62.5%
Loss severity	30.0%	50.0%	40.0%
Cumulative loan losses	**1.5%**	**4.5%**	**3.0%**
Leverage (debt/equity)	1.5x	3.0x	2.1x
Cumulative equity loss	**3.8%**	**18.0%**	**9.2%**

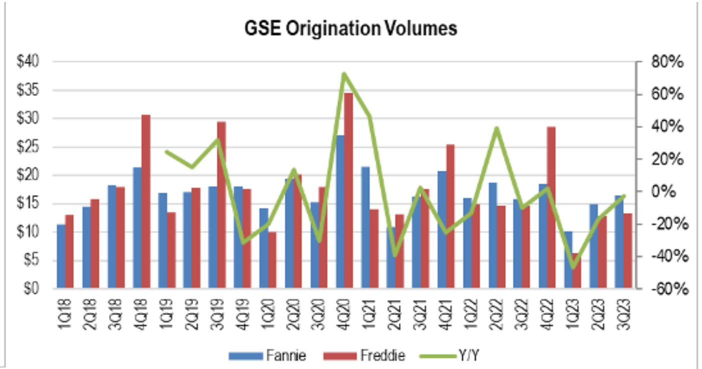
Detailed Loss Framework:

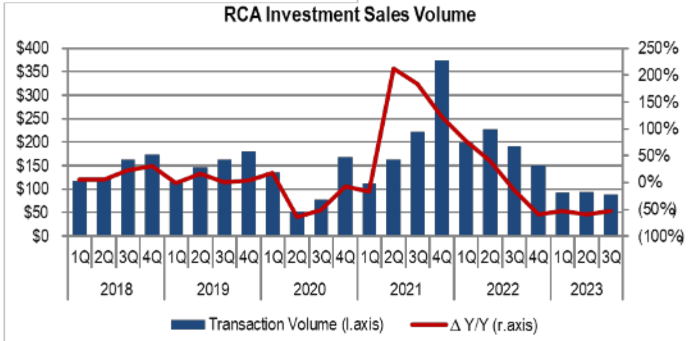
KBW CRE Loss Model	Low	High	Avg.
First Mortgage Loss			
Ending LTV	50.0%	80.0%	65.0%
Default rate (delinq. assumption * default %)	2.4%	9.0%	5.7%
Property price decline	30.0%	50.0%	40.0%
Modification/foreclosure costs	0.6%	5.0%	2.8%
Property expenses/capex	5.0%	15.0%	10.0%
Total collateral losses	**35.6%**	**70.0%**	**52.8%**
Remaining collateral basis	64.4%	30.0%	47.2%
Equity cushion remaining	14.4%	(50.0%)	(17.8%)
Loss severity	**0.0%**	**62.5%**	**27.4%**
Total, first mortgage cumulative loss	**0.0%**	**5.6%**	**1.6%**
Corporate leverage (assets/equity)	1.5x	3.0x	2.3x
Total loss to equity	**0.0%**	**22.5%**	**5.1%**
Subordinate Mortgage Loss			
Ending LTV	70.0%	85.0%	77.5%
Beginning LTV	50.0%	50.0%	50.0%
Default rate (delinq. assumption * default %)	2.4%	9.0%	5.7%
Total collateral losses (from above)	**35.6%**	**70.0%**	**52.8%**
Remaining collateral basis	64.4%	30.0%	47.2%
Equity cushion remaining	(5.6%)	(55.0%)	(30.3%)
Loss severity for first mortgage	0.0%	40.0%	20.0%
Remaining collateral proceeds for sub. position	14.4%	0.0%	0.0%
Loss severity for sub. position	**28.0%**	**100.0%**	**100.0%**
Interest expense (to first mortgage holder)	5.6%	12.9%	9.2%
Total, sub. mortgage cumulative loss	**0.8%**	**10.2%**	**6.2%**
Corporate leverage (assets/equity)	1.5x	2.5x	2.0x
Total loss to equity	**2.0%**	**35.6%**	**18.7%**
Avg. loss to equity (assuming 75% 1st mtg./25% sub. debt)			**8.5%**

Source: KBW Research.

U.S. CRE Capital Markets – Volumes Down Sharply

CRE volumes fell sharply in 2023. 3Q23 U.S. investment sales declined 53% Y/Y, CRE debt originations -49%, and GSE multifamily -3% (+4% Fannie and -9% Freddie).



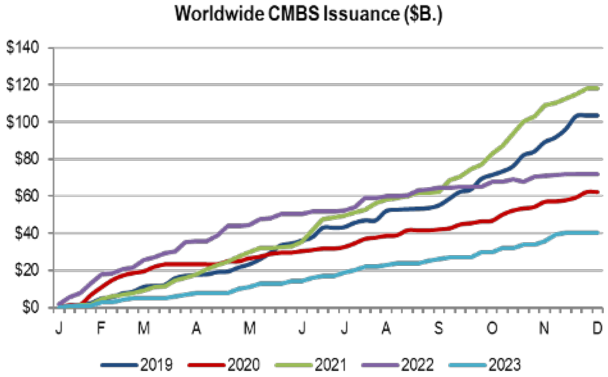


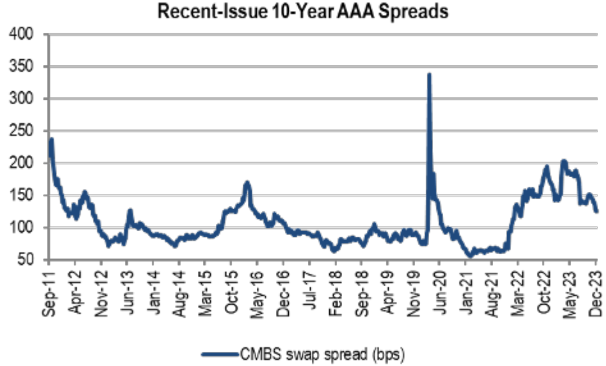
Note: $ in billions.

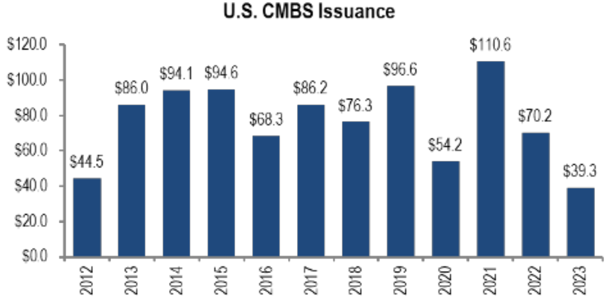
Source: Real Capital Analytics, Mortgage Bankers Association, Fannie Mae, Freddie Mac, and KBW Research.

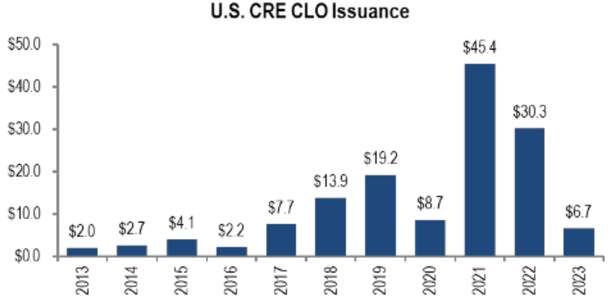
Securitization: CMBS/CLO Market Shows Challenging Volumes and Spreads

U.S. CMBS issuance totaled $39.3B in 2023, -44% vs. 2022 and -64% vs. 2021. CRE CLO issuance has fallen sharply, at $6.7B in 2023—down 78% Y/Y. CMBS 10-year fixed conduit spreads were 126 bps as of EOY 2023, down meaningfully from March high of 200 bps but above the historical avg. of 95 bps.









Note: $ in billions.
Source: Commercial Mortgage Alert and KBW Research.

Office Loss Case Study #2: Stabilized vs. Vacant Building Shows Loss Severity

KBW's Office Loss Case Study #2 illustrates the decline in value associated with leasing-up a vacant office building in the current market environment vs. that same building if it were fully-occupied.

- Our NPV analysis results in a 46% decline in value driven by tenant improvement allowances (TIs), free rent, leasing commissions (LCs), vacancy downtime, and a 15% cost of equity.

Assumptions

Square Feet	100,000
Rent (Per SF)	$55
Annual Rent Escalator	3.0%
Lease Term (Years)	10
Free Rent (Years)	0.75
TIs (Per SF)	$80
LCs	2.5%
NOI Margin	60.0%
Cost of Equity	15.0%
Current Cap Rate	8.5%
Terminal Cap Rate	7.0%

Scenario 2: Vacant Office Building

Year	1	2	3	4
Gross Rent	$0	$0	$5,500,000	$5,665,000
Free Rent	$0	$0	($4,125,000)	$0
Net Effective Rent	$0	$0	$1,375,000	$5,665,000
NOI	**($660,000)**	**($660,000)**	**($825,000)**	**$3,399,000**
TIs	$0	($8,000,000)	$0	$0
LCs	$0	($1,375,000)	$0	$0
Property Cash Flow	**($660,000)**	**($10,035,000)**	**($825,000)**	**$3,399,000**
Terminal Cap Rate				7.0%
Exit Value				$48,560,000
Total Cash Flow	**($660,000)**	**($10,035,000)**	**($825,000)**	**$51,959,000**

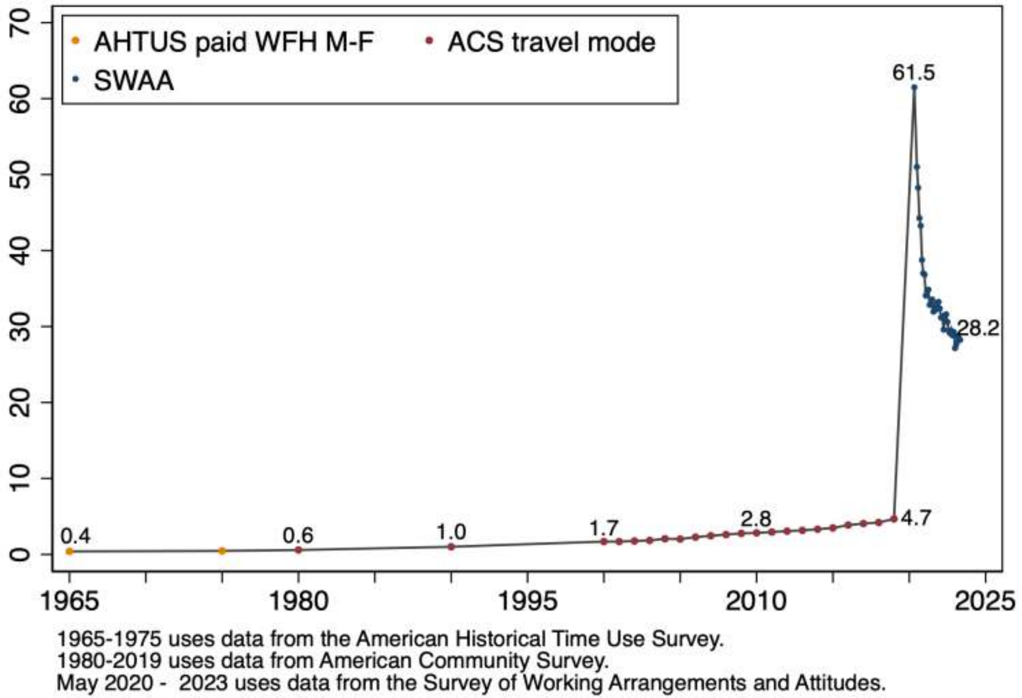
Scenario 1: Stabilized Office Building

Rent	$5,500,000
NOI	**$3,300,000**
Cap Rate	8.5%
Est. Value	**$38,820,000**

NPV @ 15% Req. Return	**$21,000,000**
Discount vs. Scenario 1	***-46%***

Source: KBW Research.

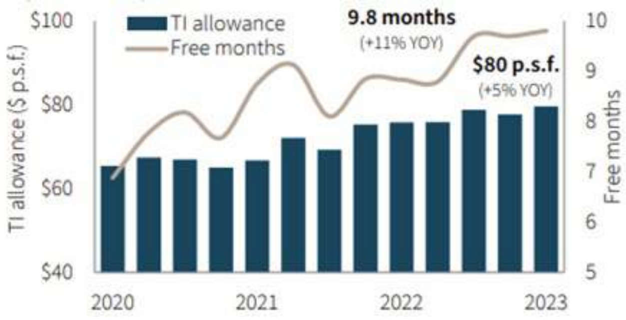
Remote Work Share… No Return to Pre-Pandemic Level



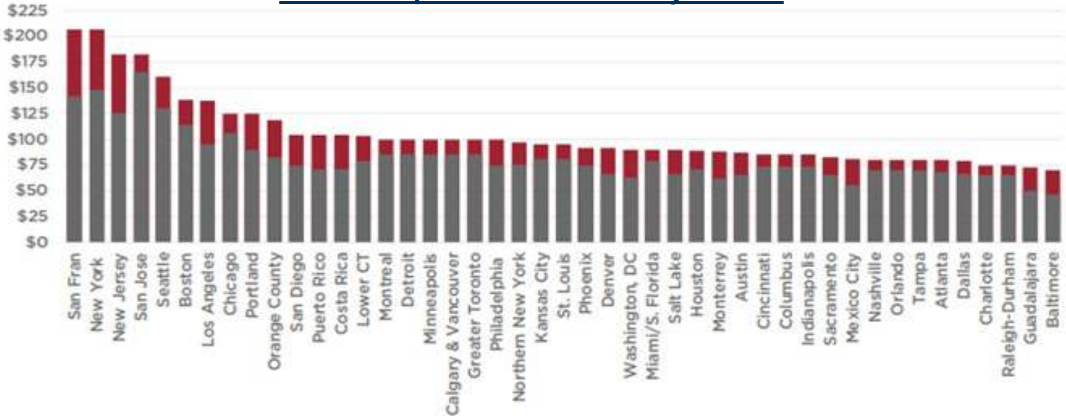
Source: WFH Research.

Office Concessions - Steady Increase Since COVID-19 Onset

U.S CBD Avg. TIs and Free Rent on 10-Year Lease

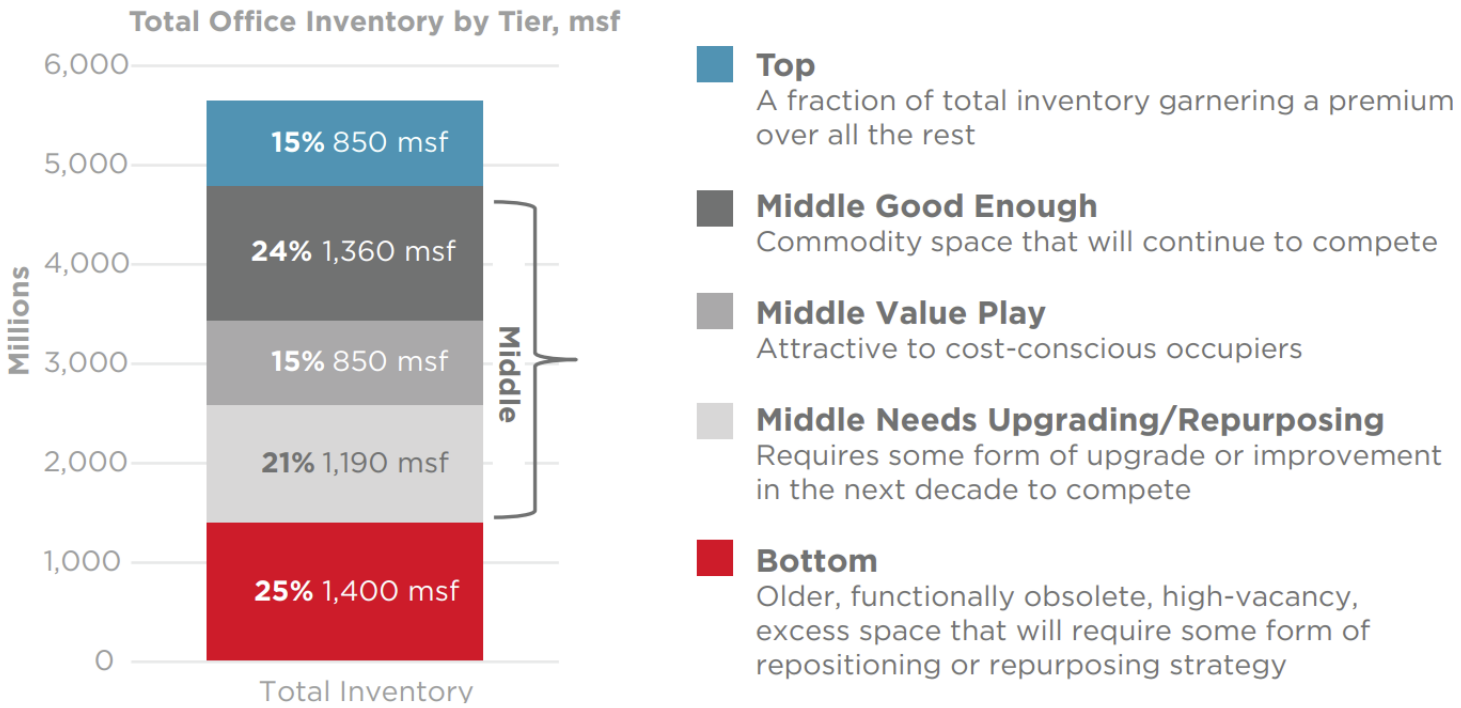


Tenant Improvement Costs by Market



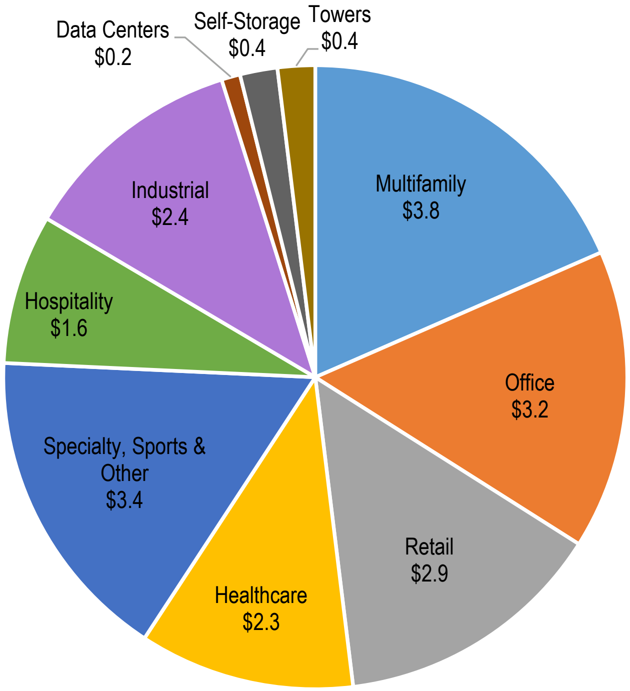
Source: JLL and Cushman & Wakefield.

Office Segmentation by Tier – Significant share at Risk



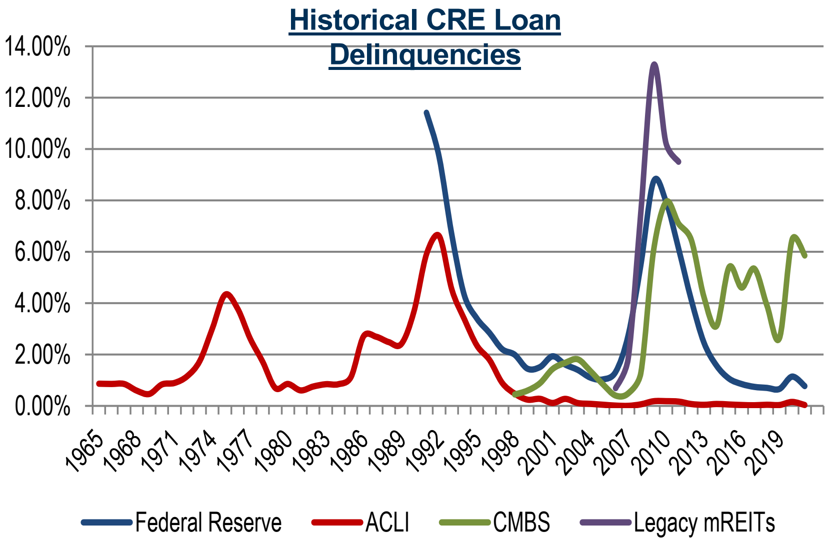
Source: Cushman & Wakefield.

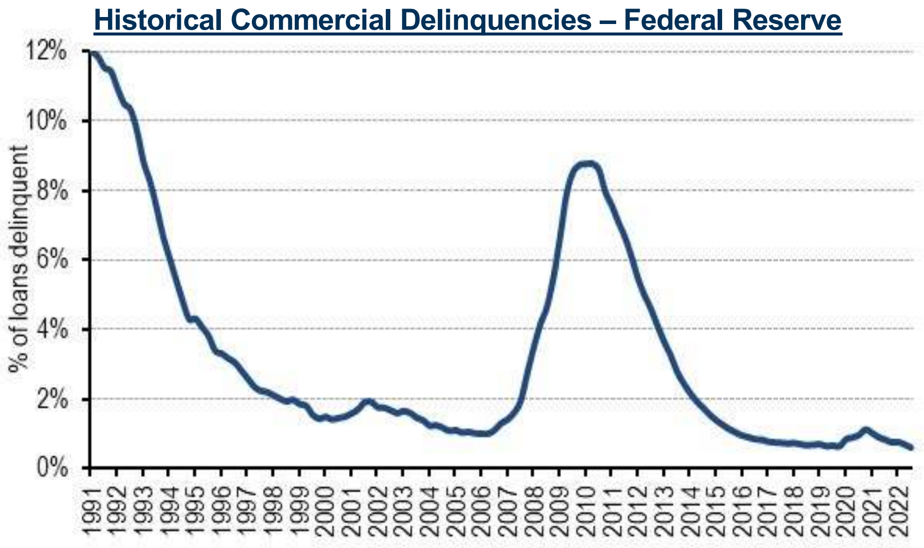
U.S. CRE Asset Values by Property Type - $20.6 Trillion



Source: NAREIT and KBW Research.
Note: Figures are as of 2Q 2021.

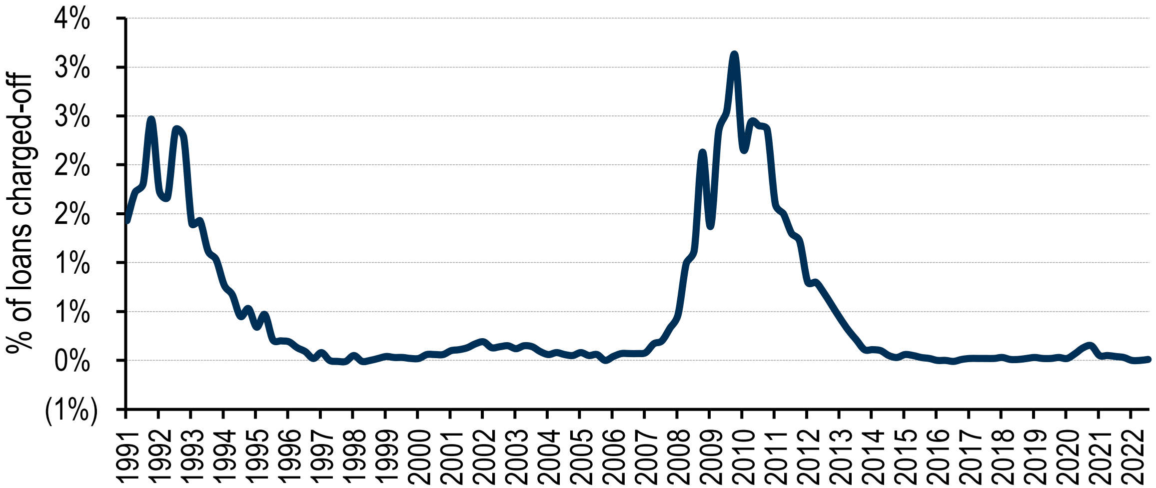
Historical CRE Loan Delinquencies





Source: Federal Reserve, ACLI, Bloomberg, Trepp, company reports, and KBW Research.

Historical CRE Charge-Offs



Source: Federal Reserve and KBW Research.

KBW – Featured Commercial Real Estate Research

- CRE 2024 Outlook: Too Early to Get Positive
- Sideways: Why KBW Expects a Flat Housing Market in 2024-2025
- Quarterly CRE Review: Stress Decelerates But Renewed Rate Pressure a Risk
- Mid-Year CRE Update: Distress (So Far) More Contained Than Feared
- No Soft Landing for CRE – Spring 2023 Update
- No Soft Landing for CRE, Especially Office – Impact Analysis Across Financials

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