

U.S. Commercial Real Estate Has Proven Resilient, but Emerging Risks Could Generate Losses for Lenders

by Tom Doolittle, Arthur Fliegelman¹

Historically, the performance of the U.S. commercial real estate (CRE) sector has suffered during economic downturns. For example, during and after the recessions of 1990-1991, 2001, and 2007-2009, CRE experienced higher vacancies, weaker cash flows, and lower valuations. As a result, financial institutions with CRE loan exposure, such as commercial banks (especially small banks) and life insurers, faced CRE delinquencies and losses. CRE credit losses reduced lenders' ability to make new loans and, in extreme cases, resulted in institutional failures.

However, the performance of the CRE sector in the 2020 recession has been different. CRE has proven more resilient this time than in previous downturns. CRE has posed little risk to the financial sector, with limited credit losses realized, although additional future credit losses are expected. This brief analyzes three areas: (1) economic conditions, (2) the financial environment, and (3) the policy decisions supporting the CRE sector after the 2020 recession, highlighting key differences from the past. This brief also examines how uncertainty from 1) higher inflation, 2) higher required risk premia, 3) changes in lessee preferences could impair valuation and debt servicing and create future risk for entities with CRE loan exposure, and 4) the possible impact of a future economic downturn.

Historically, Recessions are Bad for CRE

CRE performance is sensitive to changing economic and financial conditions. The downturn in economic activity in 1990-1991, 2001, and 2007-2009 reduced CRE demand, resulting in negative absorption of space

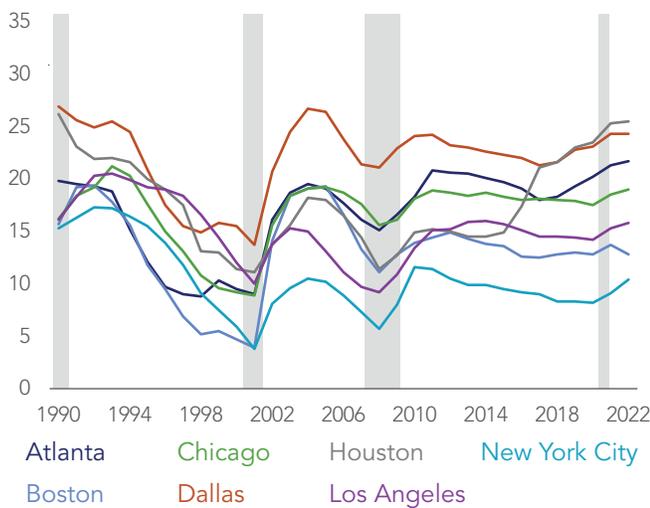
and higher office vacancy rates (see **Figure 1**). Other CRE asset classes exhibit their unique demand dynamics. Lower CRE demand and occupancy equals lower rental income and property cash flow. CRE values are also negatively affected by the financial environment during and after a recession. For example, interest rates may be higher, credit requirements

become stricter, and liquidity tightens as traditional CRE lenders (i.e., commercial banks and insurers) protect their balance sheets against further losses by tightening underwriting, further pressuring the CRE market (see **Figure 2**).

Bad CRE Performance Hurts CRE Lenders

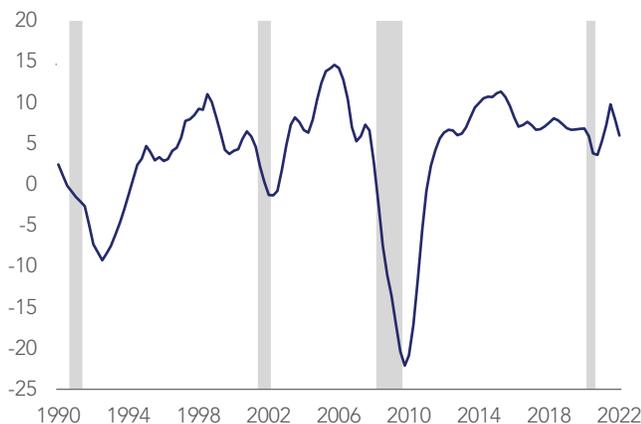
As of December 2021, there was over \$5.2 trillion in CRE debt outstanding, with depositories², Government Sponsored Entities (GSEs), and life insurers as the

Figure 1. Office Vacancy Rates, Selected Cities (percent)



Note: Shaded areas are U.S. recessions.
Sources: Moody's REIS, Office of Financial Research

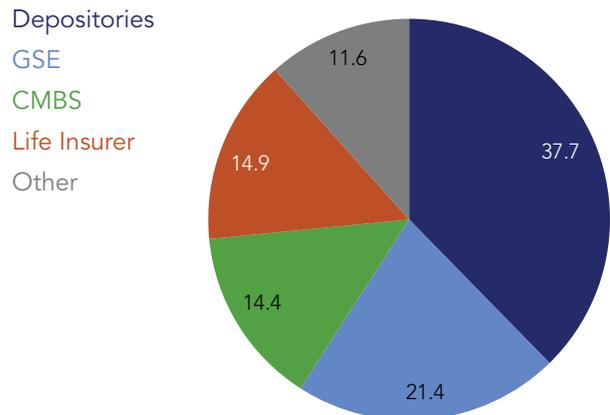
Figure 2. Composite Change in CRE Valuation (percent)



Note: Shaded areas are U.S. recessions.
Sources: MSCI, Office of Financial Research

largest holders (see **Figure 3**). Most commercial mortgage-backed securities (CMBS) are held by asset managers, life insurers, and banks³, while GSEs loans are almost exclusively secured by multifamily properties⁴. The combination of lower property cash flows and values diminishes the performance of CRE loans held by these lenders during and immediately after a recession. Lower valuations equate to higher loan-to-value (LTV) ratios, while diminished cash flows lead to reduced debt service coverage (DSC) ratios, both of which can result in stressed CRE loans, increased credit reserves, and ultimately charge-offs and loan losses (see **Figures 4** and **5**). A *feedback loop* occurs as CRE lenders tighten underwriting requirements to

Figure 3. CRE Debt Outstanding by Lender (percent)



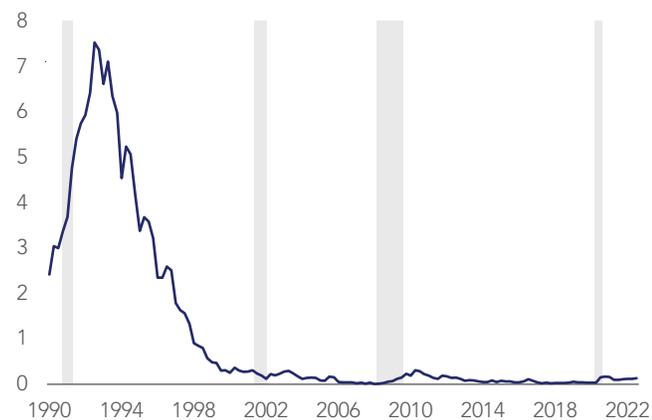
Note: Data as of Q1 2022.
Sources: Mortgage Bankers Association, Office of Financial Research

Figure 4. Bank Charge-off Rate by Loan Type (percent)



Note: Net charge-off rate. Shaded areas are U.S. recessions.
Sources: Haver Analytics, FDIC, Office of Financial Research

Figure 5. Life Insurers' CRE Loan Delinquency Rates (percent)



Note: Shaded areas are U.S. recessions.

Sources: American Council of Life Insurers, Office of Financial Research

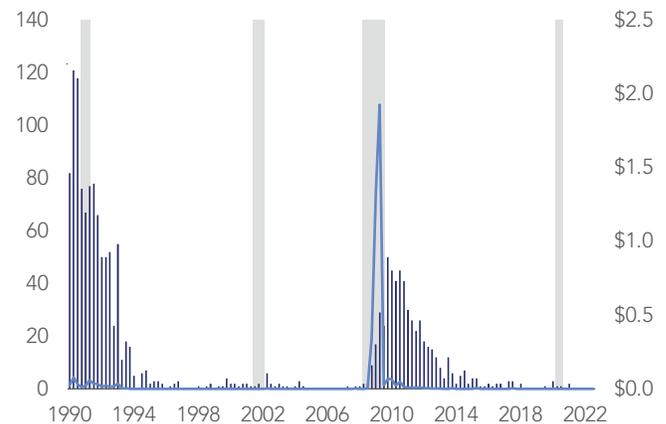
reduce losses, compounding an already challenging environment. This process explains why the CRE market takes time to recover from a recession. For example, it took 12 quarters for CRE values to recover after the 1990-1991 recession, five quarters for CRE values to recover after the 2001 recession, and seven quarters for CRE values to recover after the 2007-2009 recession (see **Figure 2**).

Leading to CRE Lender Failures and Financial Instability

When CRE charge-offs and loan losses become too numerous, some lenders become insolvent, leading to financial instability (see **Figure 6**). In addition, some depository failures have been due to CRE related losses, especially for failures occurring before banking regulatory requirements were strengthened.

During the 1990-1991 recession, depository failures were primarily due to CRE lending related losses⁵. Much of this lending was by smaller banks funding residential construction and development projects, which are less important today. Risk-based capital standards for depositories were implemented in response to these failures with the standards requiring more capital backing⁶ CRE loans. Regulators also subjected banks to more frequent and closer supervisory scrutiny under the Financial Institutions Reform, Recovery and Enforcement Act (1989)⁷.

Figure 6. Number of U.S. Depository Failures



Note: Shaded areas are U.S. recessions.

Sources: FDIC, Office of Financial Research

During and after the 2007-2009 recession, larger depositories failed primarily due to poor credit underwriting and speculation in the residential housing market; however, smaller institutions generally failed due to CRE lending⁸. As bank and non-bank financial institutions struggled, CRE financing declined. Policy initiatives, including the Housing and Economic Recovery Act (2008), the Dodd-Frank Wall Street Reform and Consumer Protection Act (2010), and Basel III (2010), required stronger capital and liquidity requirements for financial firms, established new regulators, and strengthened regulatory requirements⁹. Limited CRE financing depressed values on already struggling properties, leading to still more troubled loans.

Why Was the 2020 Recession Different for CRE?

The current CRE environment is significantly different than that following previous recessions. CRE demand remains good, with occupancy rates supporting property cash flows. This, combined with a benign financing environment, supports strong CRE valuation. Moreover, good CRE fundamentals mean outstanding loans are performing. CRE lenders, including commercial banks and life insurers, report historically low charge-off and delinquency rates. This time CRE has not been subject to declining cash flows and more cautious underwriting. The reasons for this are three-fold. First, the 2020 recession, though sharp, was more benign than previous economic downturns;

second, traditional CRE lenders kept lending; and third, policy initiatives supported economic growth and CRE demand.

1. Strong Economic Recovery

The strong economic recovery post-recession supported CRE demand and cash flows. Despite the U.S. unemployment rate reaching 14.7% in April 2020, employment recovered more quickly than in previous recessions (see **Figure 7**) – only 16 months. It took 58 months for employment to recover after the 1990-1991 recession, 30 months after the 2001 recession, and 78 months after the 2007-2009 recession. In addition, consumer demand remained strong during and after the 2020 recession (see **Figure 8**). During the 1990-1991 recession, real disposable personal income per capita fell by \$484; during the 2001 recession, it fell by \$233; and during the 2007-2009 recession, it fell by \$309. However, it grew by \$6,316 during the 2020 recession supporting overall economic activity.

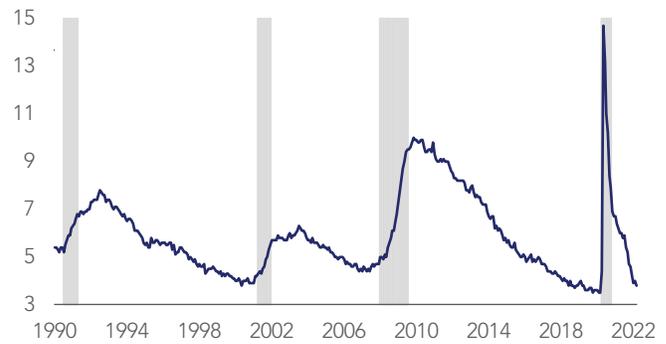
2. Strong, Liquid Financial Markets

Favorable financial markets during and after the 2020 recession have also supported CRE. Currently, investors see less long-term risk than during previous recessions, as shown by the 10-year treasury minus federal funds rate metric (see **Figure 9**). During the 1990-1991 recession, the metric grew by 167 basis points; during the 2001 recession, it grew by 298 basis points; and during the 2007-2009 recession, it grew by 365 basis points. However, the ratio grew by only 69 basis points during the 2020 recession and, although increasing, remains below recent peaks. In addition, monetary liquidity is also robust, as indicated by the “TED spread,¹⁰” the difference between the 3-month treasury bill and the 3-month LIBOR, and now the “Secured Overnight Financing Rate (SOFR) spread¹¹,” the difference between the 3-month treasury bill and SOFR (see **Figure 10**)¹². Despite the 2020 recession, the SOFR spread remained low and lower than the TED spread in previous economic downturns.

3. Economic and Financial Policy Worked

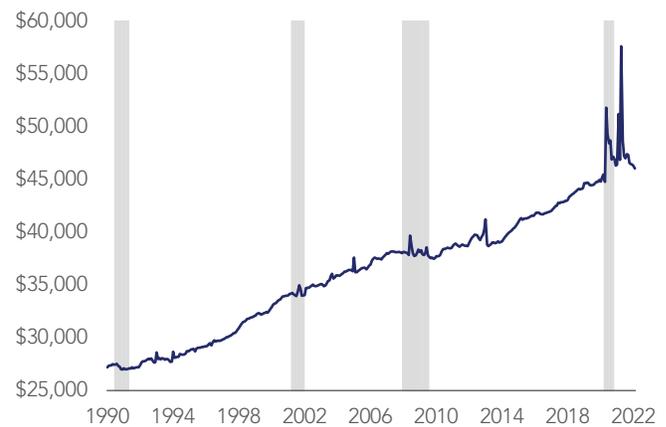
The economic and policy initiatives undertaken during and after the 2007-2009 recession and the 2020 recession have supported current economic growth and

Figure 7. U.S. Unemployment Rate (percent)



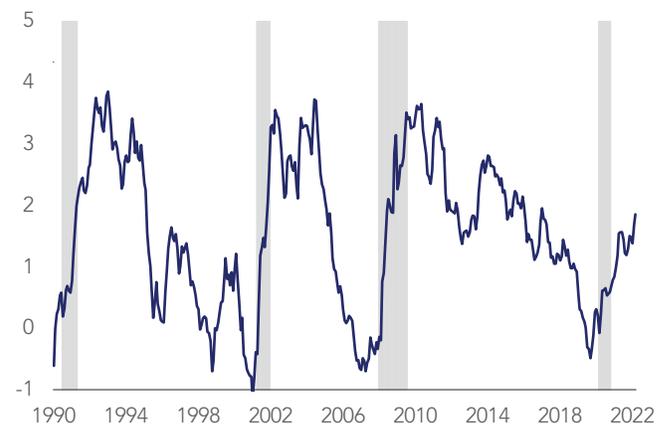
Note: Seasonally adjusted. Shaded areas are U.S. recessions.
Sources: Federal Reserve Economic Data (FRED), Office of Financial Research

Figure 8. Real Disposable Personal Income Per Capita



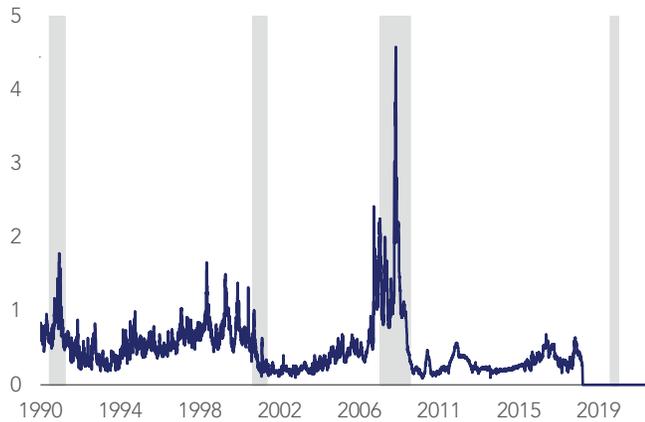
Note: Seasonally adjusted, chained 2012. Shaded areas are U.S. recessions.
Sources: FRED, Office of Financial Research

Figure 9. 10-Year Treasury Minus Federal Funds Rate (percent)



Note: Constant maturity. Shaded areas are U.S. recessions.
Sources: FRED, Office of Financial Research

Figure 10. TED Spread/SOFR Spread (percent)



Note: TED spread, January 1990-August 2018, SOFR spread, thereafter. Shaded areas are U.S. recessions.

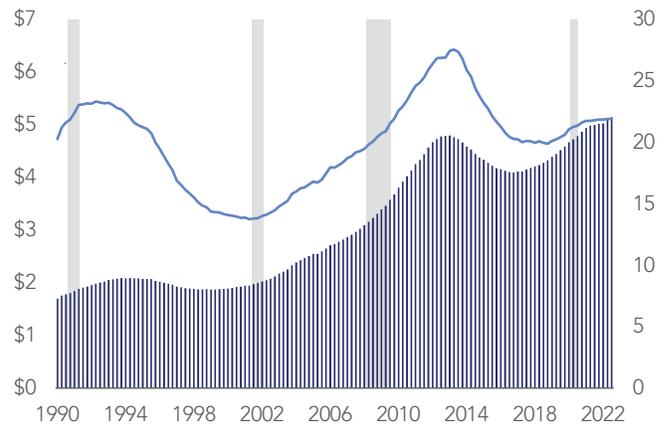
Sources: FRED, NY Federal Reserve, Office of Financial Research

CRE lender solvency benefiting the U.S. property market. The CARES Act (2020), Consolidated Appropriations Act (2021), and American Rescue Plan Act (2021) supported and augmented consumer spending that helped CRE demand¹³. In addition, financial regulation changes have improved CRE lending quality¹⁴. CRE debt relative to GDP remains below 2015 levels (see **Figure 11**). An example of lender restraint, the mix of CRE loans currently held by depositories is different and less risky than the composition held during the 2007-2009 recession (see **Figures 12 and 13**). At the end of 2008, construction and development (C&D) loans were a large part of the loan mix at 30.6%, with it now down about half of this at 15.4%. C&D loans are the riskiest CRE loans with the highest loss rates. The CRE environment is improving due to more supportive economic policies, stricter bank supervision, and stronger bank capital and liquidity requirements.

Emerging Risks Could Generate Losses for CRE Lenders

Despite the current CRE resiliency discussed above, emerging risks that could pressure the performance of the property securing the \$5.2 trillion of CRE debt outstanding. This could potentially lead to troubled loans and, if severe, systemic financial risk for the U.S. Emerging risks that might affect CRE include: (1) a sustained rise in inflation which could pressure CRE sectors subject to rapidly rising operating costs, (2)

Figure 11. CRE Debt Outstanding and as a Percentage of GDP



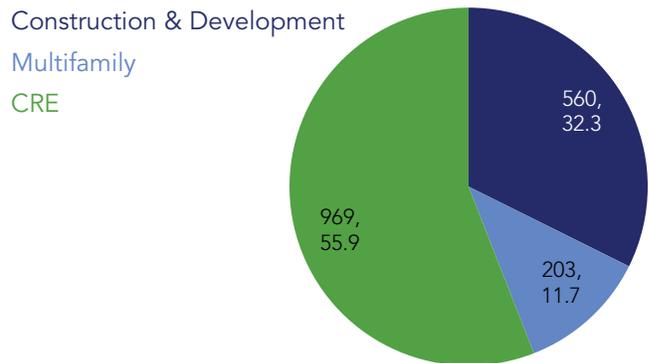
CRE Debt as a Percentage of GDP (line, right, percent)

CRE Debt Outstanding (bar, left, \$ trillions)

Note: Shaded areas are U.S. recessions.

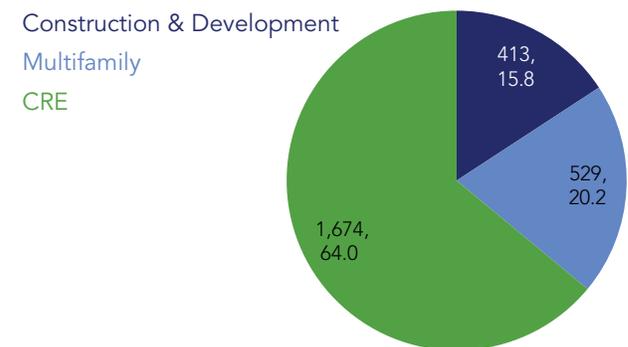
Sources: Haver Analytics, Office of Financial Research

Figure 12. Q4 2008 Depository CRE Loans Outstanding (\$ billions, percent)



Sources: FDIC, Statista, Office of Financial Research

Figure 13. Q1 2022 Depository CRE Loans Outstanding (\$ billions, percent)



Sources: FDIC, Statista, Office of Financial Research

Figure 14. Emerging Risks in CRE Loans

Risk		Effect on LTV Ratios		Effect on DSC Ratio
Inflation	Down	Higher rental income and cash flow may increase CRE value, lowering the LTV ratio.	Up	Increase the DSC ratio depending upon relative increase in operating costs.
	Up	Higher risk-free rate will lower CRE value, increasing LTV ratio.		
Higher risk premia	Up	Higher risk premia will lower CRE value, increasing the LTV ratio.	NA	No effect.
Recession	Up	Lower rental income and cash flow will lower CRE value, increasing the LTV ratio.	Down	Lower rental income and cash flow will decrease the DSC ratio.
Reduced space demand	Up	Lower rental income and cash flow will lower CRE value, increasing the LTV ratio.	Down	Lower rental income and cash flow will decrease the DSC ratio.

Source: Office of Financial Research

CRE investors requiring a higher return (higher risk premia) to hold CRE, and (3) negative economic growth. In addition, OFR has analyzed a new emerging risk, (4) a change in lessee preferences that could increase CRE vacancy rates, such as office lessees requiring less space as employee telework, reflecting the reality of current work schedules and office place norms. The following analysis focuses on two risk vectors,¹⁵ which have historically pressured CRE loans and have generated credit losses for commercial banks and insurers—falling CRE values that result in higher LTV ratios and lower CRE cash flows that compress DSC ratios (see **Figure 14**).

Loan covenants generally require CRE to be valued annually by an appraiser to determine its LTV ratio and its owner to submit annual financial statements to calculate its DSC ratio.¹⁶ Although appraisers may use several valuation methodologies¹⁷, their primary method is the discounted cash flow approach (DCFA).¹⁸ The DCFA calculates the net present value of future cash flows using a discount rate incorporating the “risk-free rate” plus a required investor risk premia¹⁹. Using this methodology, a higher discount rate due to a rising risk-free rate will lower CRE cash flow valuation. A lower valuation will, in turn, raise the LTV ratio. On the other hand, a higher inflationary environment could increase future rental income and cash flows, depending on the length and provisions of its lease terms, increasing both CRE value (lowering its LTV ratio) and its DSC ratio.

These four emerging risks may have diverging effects on loan LTV and DSC ratios. To quantify their influence on the performance of CRE loans, a conventional appraisal model²⁰ that projects cash flows and calculates their present value is developed using the DCFA on a sample 100,000 square-foot office building²¹. The base case assumes (1) 2% annual rent growth, (2) a 6% discount rate, and (3) no change in lessees’ space requirements. This model computes the present value of this office building at \$36.5 million. In reviewing **Figures 15** and **16**, which are sensitivity matrices²² illustrating the change in the present value of the property should its annual rent increase (in the case of inflation), its discount rate increase (in the case of inflation or an increase in required risk premia), or its tenants reduce their space at lease renewal. These two tables illustrate the effect on CRE present value in the case of the four emerging risks listed above.

The analysis shows that should the annual rent growth rate increase to 4%, but the discount rate remains unchanged, the property’s present value could increase to \$40.1 million or up 10% (see **Figure 15**, southwest quadrant). On the other hand, if the annual rent growth rate remains unchanged at 2%, but the discount rate rises to 8% (see **Figure 15**, northeast quadrant), the property’s present value would fall to \$27.1 million (or 26%). Finally, should the annual rent and discount rate remain the same, but the tenants of the building each reduce their leased space by 20% at the lease end, the present value of the property falls to \$30.9 million (or 15%) see **Figure 16**, northeast quadrant.

Figure 15. Change in Unleveraged Property Value

Annual Rent Growth Rate	Discount Rate				
	6.00%	6.50%	7.00%	7.50%	8.00%
2.00%	0%	-8%	-15%	-21%	-26%
2.50%	2%	-6%	-13%	-19%	-24%
3.00%	5%	-4%	-11%	-17%	-23%
3.50%	7%	-1%	-9%	-15%	-21%
4.00%	10%	1%	-7%	-13%	-19%

Note: Shaded box is the base case with 6% discount rate, 2% annual rent growth rate and 0% tenant space reduction factor.
Sources: Office of Financial Research

Figure 16. Change in Unleveraged Property Value

Annual Rent Growth Rate	Tenant Space Reduction Factor				
	0%	-5%	-10%	-15%	-20%
2.00%	0%	-8%	-15%	-21%	-26%
2.50%	2%	-6%	-13%	-19%	-24%
3.00%	5%	-4%	-11%	-17%	-23%
3.50%	7%	-1%	-9%	-15%	-21%
4.00%	10%	1%	-7%	-13%	-19%

Note: Shaded box is the base case with 6% discount rate, 2% annual rent growth rate and 0% tenant space reduction factor.
Sources: Office of Financial Research

Figure 17. Leveraged Property LTV Ratio

Annual Rent Growth Rate	Discount Rate				
	6.00%	6.50%	7.00%	7.50%	8.00%
2.00%	80%	87%	94%	100%	108%
2.50%	78%	85%	92%	99%	106%
3.00%	76%	83%	90%	97%	103%
3.50%	75%	81%	88%	94%	101%
4.00%	73%	79%	86%	92%	99%

Note: Shaded box is the base case with 6% discount rate, 2% annual rent growth rate and 0% tenant space reduction factor.
Sources: Office of Financial Research

Figure 18. Leveraged Property DSC Ratio

Annual Rent Growth Rate	Tenant Space Reduction Factor				
	0%	-5%	-10%	-15%	-20%
2.00%	1.33x	1.27x	1.21x	1.15x	1.09x
2.50%	1.37x	1.30x	1.24x	1.18x	1.12x
3.00%	1.40x	1.34x	1.28x	1.21x	1.15x
3.50%	1.44x	1.38x	1.31x	1.24x	1.18x
4.00%	1.48x	1.42x	1.35x	1.28x	1.21x

Note: Shaded box is the base case with 6% discount rate, 2% annual rent growth rate and 0% tenant space reduction factor.
Sources: Office of Financial Research

Most CRE is leveraged, and that could create financial stability risks for CRE lenders. In view of Figures 17 and 18, consider the same building acting as security for a \$29.2 million fixed, non-amortizing loan at 5.75%. Initially, the property has an LTV ratio of 80% and a minimum DSC ratio of 1.33x. Should the annual rent growth rate remain unchanged at 2%, but the discount rate rises to 8% (see **Figure 17**, northeast quadrant), the property's present value would fall to \$27.1 million. In this scenario, the building is securing a \$29.2 million loan, equating to an LTV ratio of 108%. If the annual rent growth rate and discount rate remain the same, but each tenant reduces its space leased by 20% at the lease end, the present value of the property falls to \$30.9 million (still above the loan

amount); however, its DSC ratio falls from 1.33x to a subprime 1.09x (see **Figure 18**, northeast quadrant). By reducing their space requirements, tenants could cause future loan impairments by decreasing the property's future cashflows.

The financial model illustrates the cyclical nature of real estate performance and the importance of sound CRE loan underwriting. Changes analyzed are (1) inflation, (2) required CRE risk premia, (3) reduced economic growth or a recession, and (4) tenant space preferences. All can have a detrimental impact on property values and LTV and DSC ratios, which can turn a performing loan into a problem loan.

The U.S. is experiencing rising inflation, and the Federal Reserve has already increased interest rates and

has signaled future hikes. Tight U.S. monetary policy has presaged nine of the past 12 U.S. recessions. Absent robust policy intervention, recessions are bad for most assets, including CRE. It may then take a considerable period for a full recovery to take place. For example, it took between five to 12 quarters for CRE values to recover after the 1990-1991, 2001, and 2007-2009 recession, while CRE values remained positive after the 2020 recession (see **Figure 2**).

The ability of CRE to benefit from, or be hurt by, an emerging risk such as inflation depends upon the CRE sector, property rental terms, and the tenants' ability to pay. Properties with shorter term leases such as hotels (nightly) or apartments (annually) can rapidly adjust rents in reaction to inflation. Properties subject to long-term fixed rental rates, such as net-leased offices or rental properties, have less rent flexibility. Properties subject to fixed-rate leases for longer terms may act more like bonds, with rising interest rates reducing their value.

During and after the 2020 recession, CRE generally was not subject to lower rental income and cash flows, enhanced underwriting requirements, and reduced liquidity, unlike previous recessions. The 2020 recession was more benign than most due to previously discussed policy initiatives supporting economic growth that

maintained CRE demand. CRE benefited from ample liquidity and low interest rates that maintained strong valuations and an active sales and financing environment. Strong regulation and supervision implemented during previous recessions contributed to defensible CRE underwriting standards. CRE lenders continued to lend, and delinquency rates and credit losses remained low. There remained ample CRE financing availability during the pandemic period.

However, there could be future risks for CRE lenders. Emerging risks such as inflation or higher required risk premia could result in lower property valuations if rental growth and higher cash flow cannot offset them. Tighter monetary policy due to rising inflation may stunt economic growth, reducing CRE demand and rental growth, resulting in reduced future cash flow. Changes in lessee and consumer preference could reduce long-term occupancy in office buildings and other CRE, such as brick-and-mortar retail, resulting in reduced debt servicing capacity. It is also uncertain whether policy initiatives successfully used during the 2020 recession will again be used during future economic downturns. With \$5.2 trillion of CRE loans outstanding, the future performance of CRE remains important for overall financial stability.

Endnotes

- 1 Thomas Doolittle, Financial Analyst, Office of Financial Research (thomas.doolittle@ofr.treasury.gov) and Arthur Fliegelman, Senior Financial Analyst, Office of Financial Research (arthur.fliegelman@ofr.treasury.gov). The authors would like to thank the following individuals for their assistance in the preparation of this Brief: Matthew Anderson of Trepp, LLC; Jim Costello of MSCI; Randall Dodd of the Federal Insurance Office; Robert DiChiara and Lisa Garcia of the Federal Deposit Insurance Corporation; and Andrew M. Melnyk of the American Council of Life Insurance.
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- 20 Adams/Booth/MacGregor provide a useful overview of preparing CRE cash flows for an appraisal model. See: Adams A.T., Booth P.M., and MacGregor, B.D. "Property Investment Appraisal." *British Actuarial Journal*, Volume 5, Issue 5, (1999, December) pp. 955-982. <https://doi.org/10.1017/S1357321700000763>
- 21 Excel modelling is used extensively in CRE DCFA appraisals and valuations. See: Harvard, T. *Financial Feasibility Studies for Property Development*. London, UK: Routledge, 2019 and Ataguba, J., "Spreadsheet Iteration of Reversionary Leasehold Rental Growth Rate Within the Framework of Explicit DCF Appraisals." *International Journal of Built Environment and Sustainability*, 8(1) (2021, August), 29-45. <https://pdfs.semanticscholar.org/e15e/5ac528b0f982b785bb53ec08caf40838132d.pdf>

The financial model is written in Excel and assumes a hypothetical 100,000 square foot office building with 10 identical tenants each renting 10,000 square feet of space. Each tenant initially pays the same rent of \$20.00 per square foot net, meaning the tenants pay for all operating expenses and required capital improvements. The lease end date for each tenant is staggered annually and sequentially. That is, one tenant's lease ends after one year and must relet its space at the new market rent, the second tenant's lease rolls over after two years, and must relet its space at the new market rent, and so on. Annual rental growth is assumed to range from 2% to 4% annually. The hypothetical building is valued using a 10-year DCFA with the discount rate and residual capitalization ranging from 6% to 8%. Finally, the analysis considers that each tenant may reduce its leased space by up to 20% (from 10,000 to 8,000 square feet) at the end of its lease.

22 Financial sensitivity models are commonly used to analyze CRE valuations. See: Hoesli, M., Jani, E. and Bender, A., "Monte Carlo Simulations for Real Estate Valuation." *Journal of Property Investment & Finance*, Vol. 24 No. 2, (2006, March) pp. 102-122. <https://doi.org/10.1108/14635780610655076>. In addition, CRE modelling is used by major credit rating agencies to assess credit risk in CRE mortgage loans and portfolios. The Commercial Mortgage Model by Moody's Investor Service uses loan level inputs (e.g., cash flow, LTV and DSC ratios) to forecast credit risk metrics and maintain an "early warning system" for potential defaulters. See: Moody's Investor Service, *Commercial Mortgage Analytics FAQs*, <https://www.moody.com/sites/products/ProductAttachments/commercial%20mortgage%20metrics%20faq.pdf>