A TALE OF TWO BANKING CRISES: 2008 AND 2023

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A Tale of Two Banking Crises: 2008 and 2023

- On Mar. 10, 2023, Silicon Valley Bank was closed by its regulators, sparking a wave of contagion that threatened to spread throughout the banking system.
- At the time, many called it a “Lehman moment,” in reference to the bankruptcy filing by the investment bank Lehman Brothers on Sep. 15, 2008 that ushered in the near collapse of the U.S. financial system.

A Tale of Two Banking Crises: 2008 and 2023

- In fact, these two events had little in common.
  - SVB was a commercial bank while LB was an investment bank--two very different animals.
  - The underlying causes of the two event were fundamentally different.
    - SVB failed because of losses on its securities portfolio caused by the rapid runup in interest rates.
    - LB failed because of losses on its securities portfolios caused by the collapse of housing prices.

A Tale of Two Banking Crises: 2008 and 2023

- This points to the fundamental difference in the underlying causes of the two crises.
  - In 2008, the collapse of housing prices was the underlying cause.
  - We refer to this as "credit risk."
  - In 2023, the collapse of bond prices was the underlying cause, driven by the unprecedented rise in interest rates.
  - We refer to this as "interest-rate risk."

A Tale of Two Banking Crises: 2008 and 2023

- "Credit risk" is the probability of financial loss resulting from a borrower's failure to repay a loan.
  - Banks "price" and / or "ration" credit to manage their credit risk.
    - "Price:" They charge higher interest rates and require more collateral and/or larger personal guarantees.
    - "Ration:" They deny loan requests from the riskiest or most opaque borrowers.

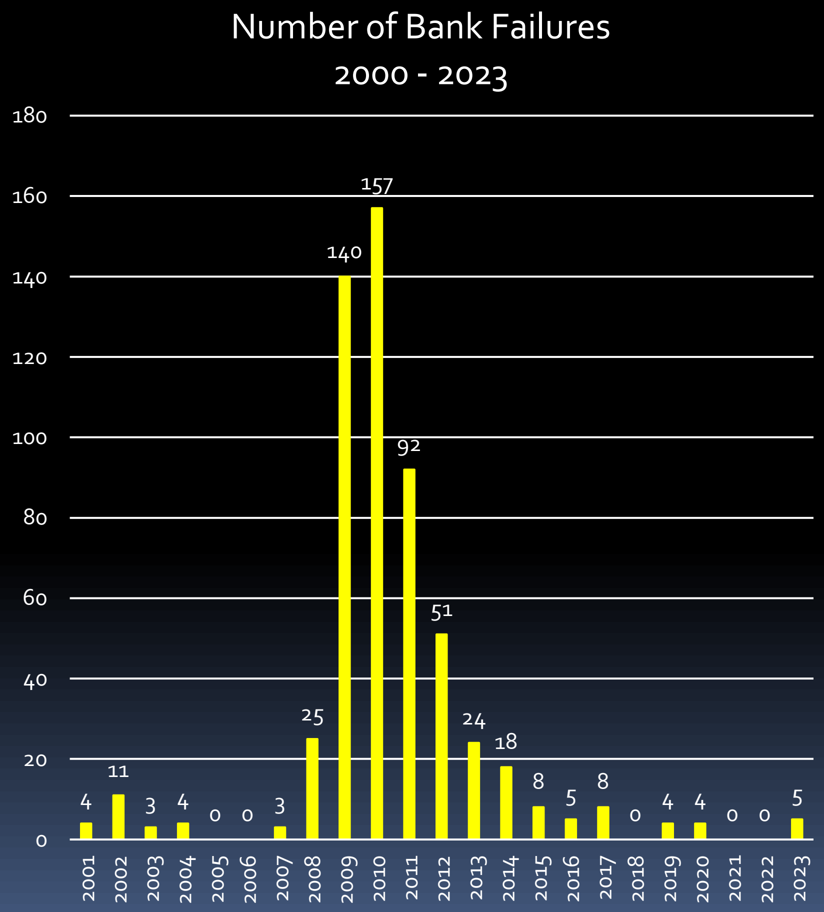
A Tale of Two Banking Crises: 2008 and 2023

- "Interest-rate risk" is the probability of financial loss on fixed-income investments (such as bonds) resulting from an upward move in interest rates.
  - Bond prices fall when rates rise and rise when rates fall.
  - To understand this, think about your home mortgage.
  - When rates fall, you refinance your mortgage to reduce your monthly payment because the new mortgage is cheaper.
  - When rates rise, you avoid refinancing because that would increase your monthly payment because the new mortgage is more expensive.

A Tale of Two Banking Crises: 2008 and 2023

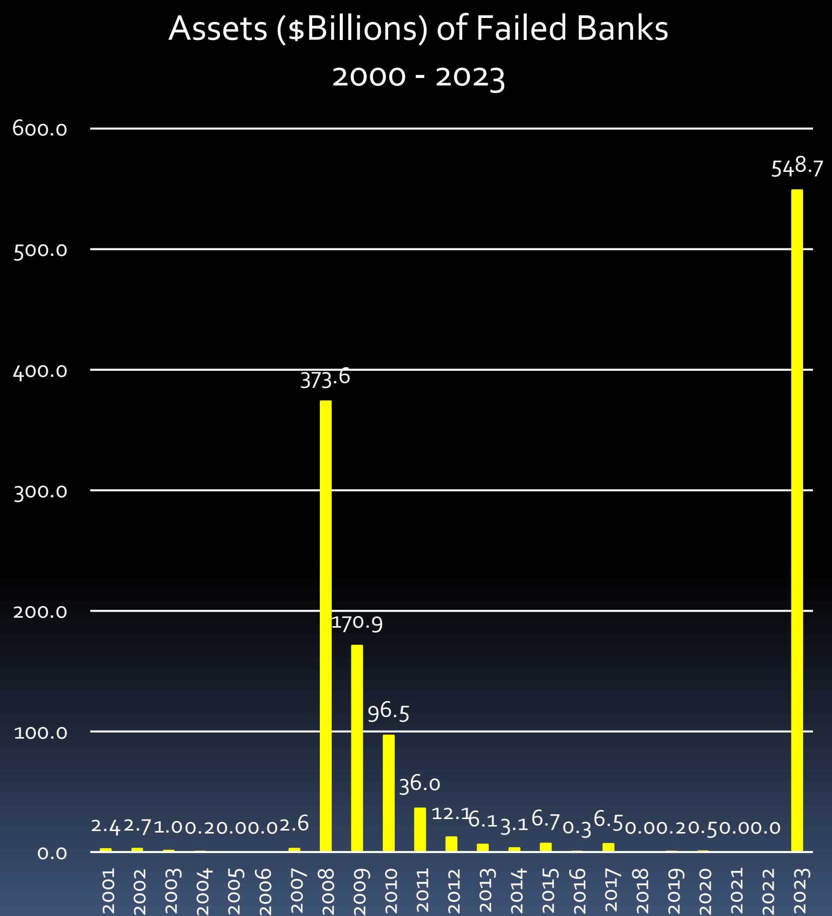
- However, there are two major similarities underlying the two crises.
  - First, fundamental failures in risk-management by banks were largely responsible for both crises.
    - Failure by bank management to control credit risk during the period up to 2008 and to control interest-rate risk in the period up to 2023.
  - Second, losses on asset-backed securities, including residential mortgage-backed securities (RMBS) and collateralize debt obligations (CDOs) were the proximate causes of both crises.

A Tale of Two Banking Crises: 2008 and 2023



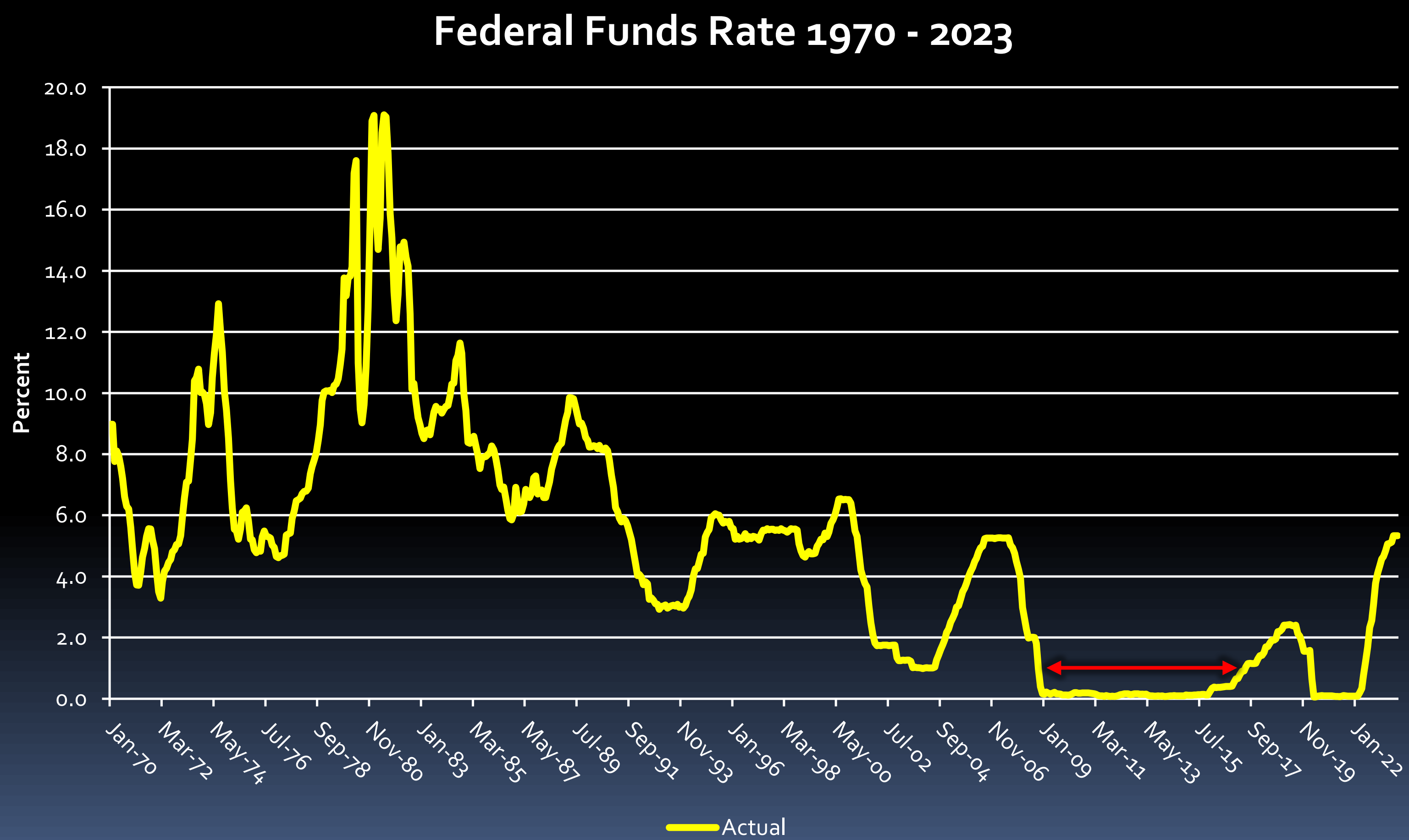
- When we look at the number of bank failures by year, we see only one crisis:
  - 2008-2014.
  - 507 banks failed.
- During 2023, there were only five bank failures.

A Tale of Two Banking Crises: 2008 and 2023



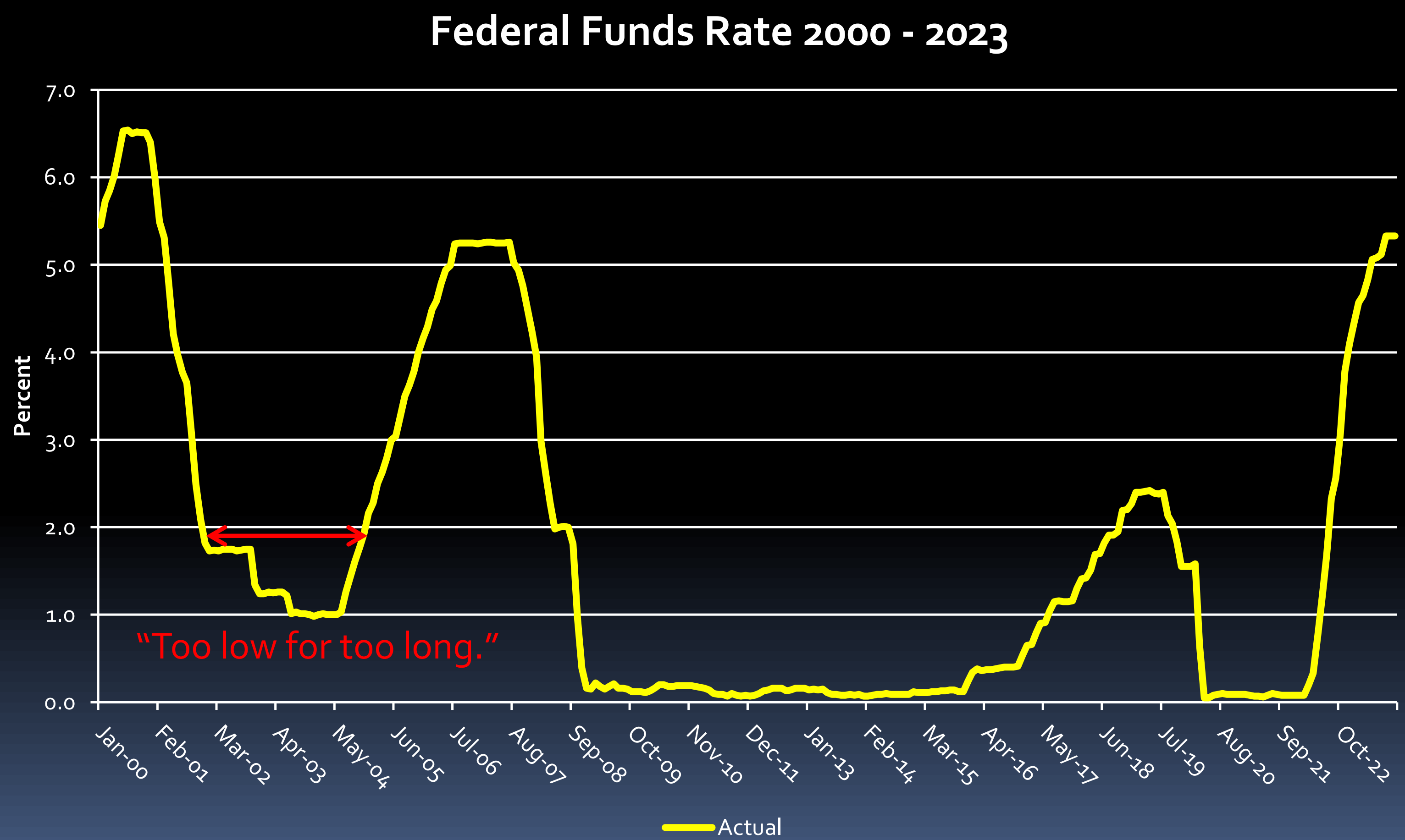
- When we look at the assets of bank failures by year, we now see two crises:
  - 2008-2012: $689 billion.
  - 2023: $549 billion.

The Fed's Crisis Response: Zero Interest Rate Policy (ZIRP)



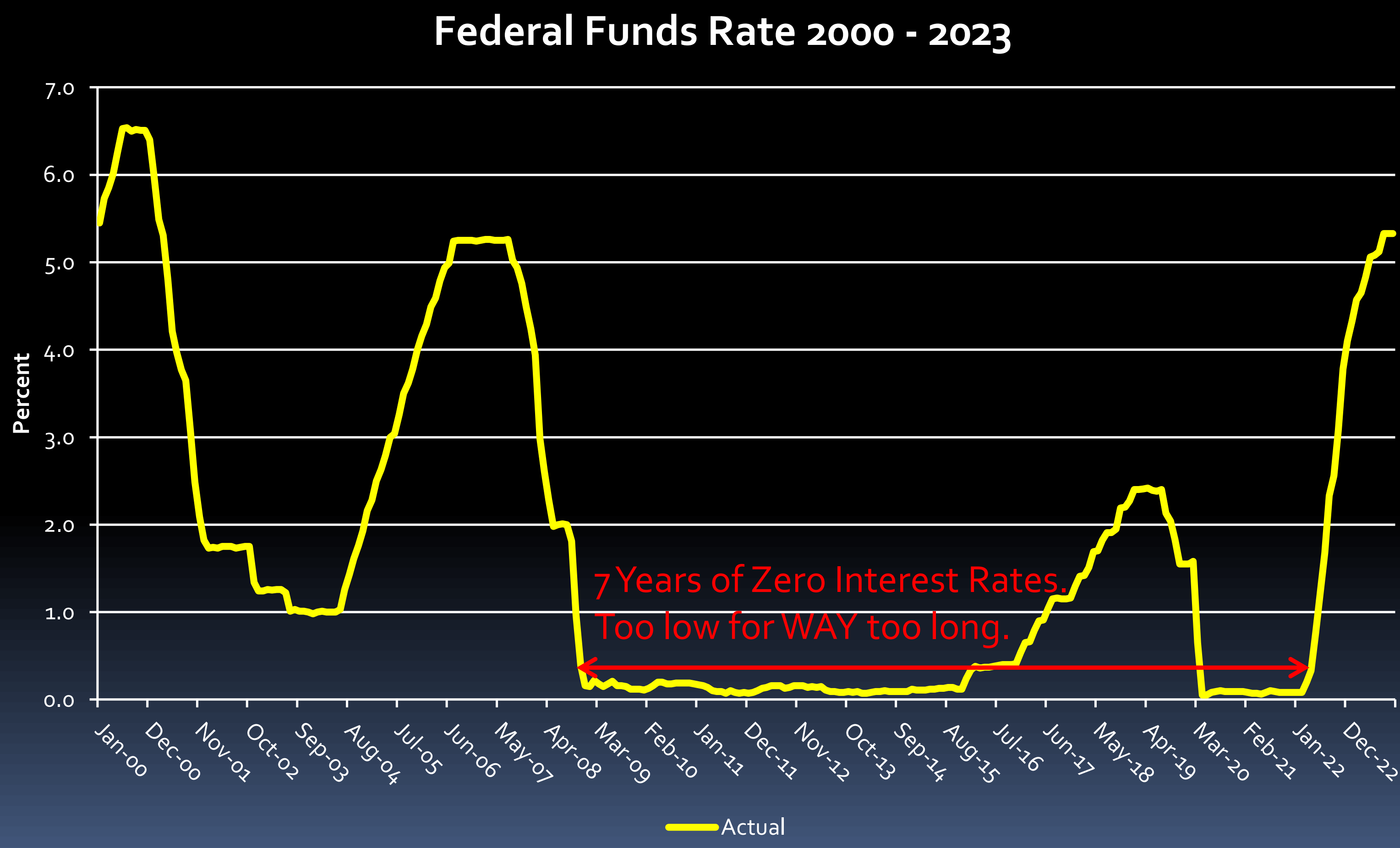
Source: Federal Reserve Economic Data (FRED)

The Fed’s Crisis Response: Zero Interest Rate Policy (ZIRP)



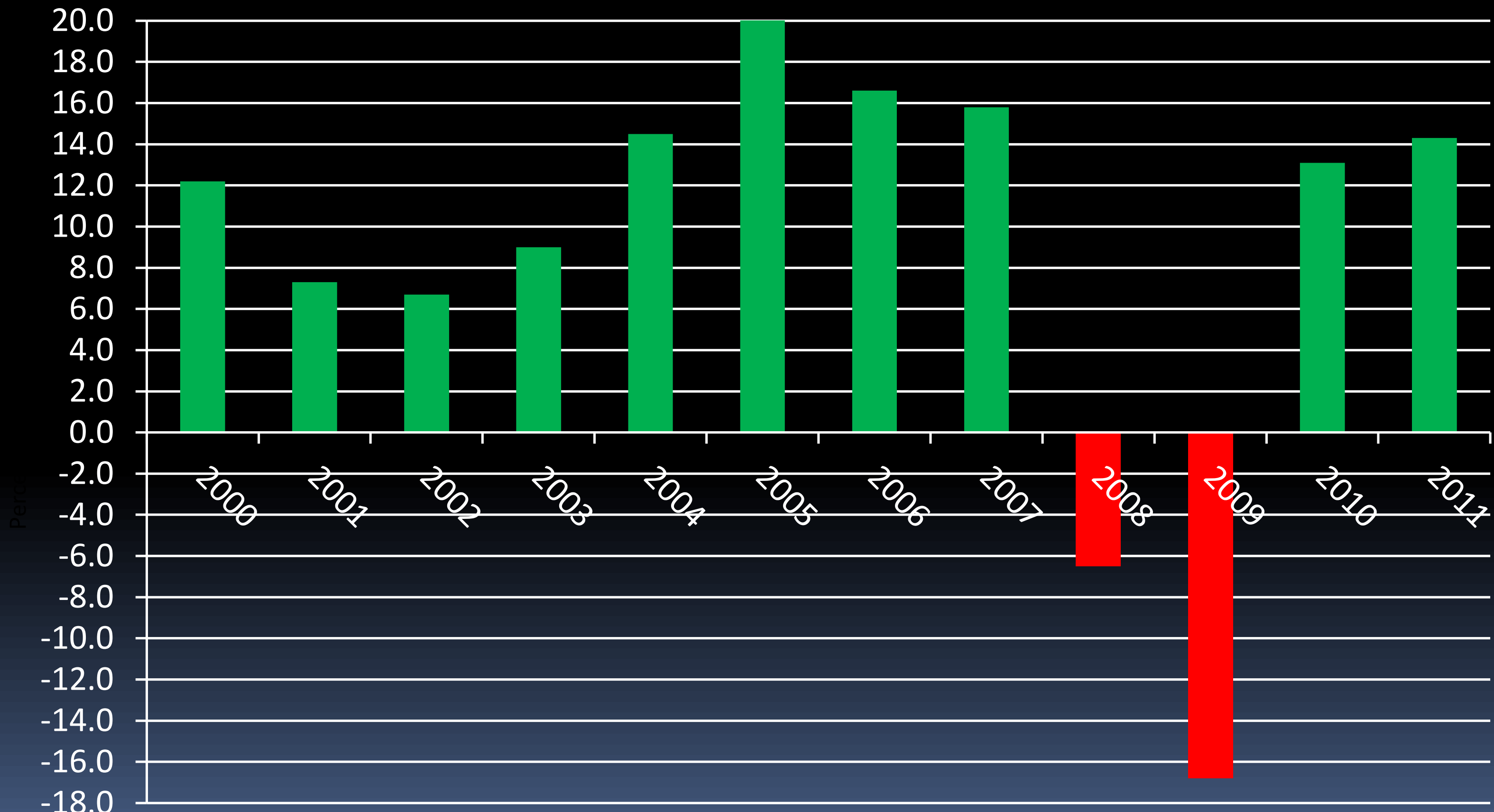
Source: Federal Reserve Economic Data (FRED)

The Fed’s Crisis Response: Zero Interest Rate Policy (ZIRP)



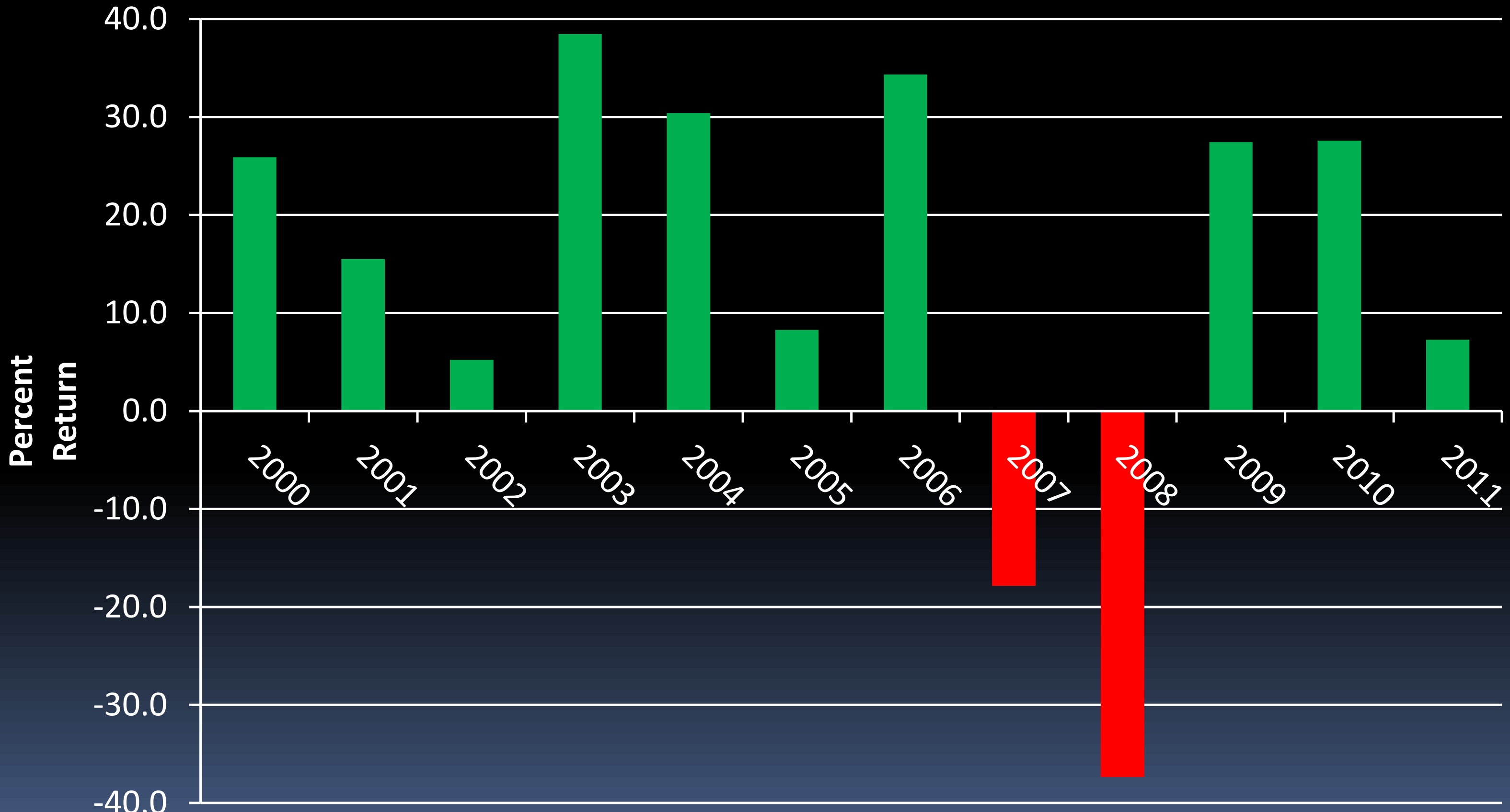
Source: Federal Reserve Economic Data (FRED)

The 2008 Banking Crisis:
Impact on Commercial Real Estate



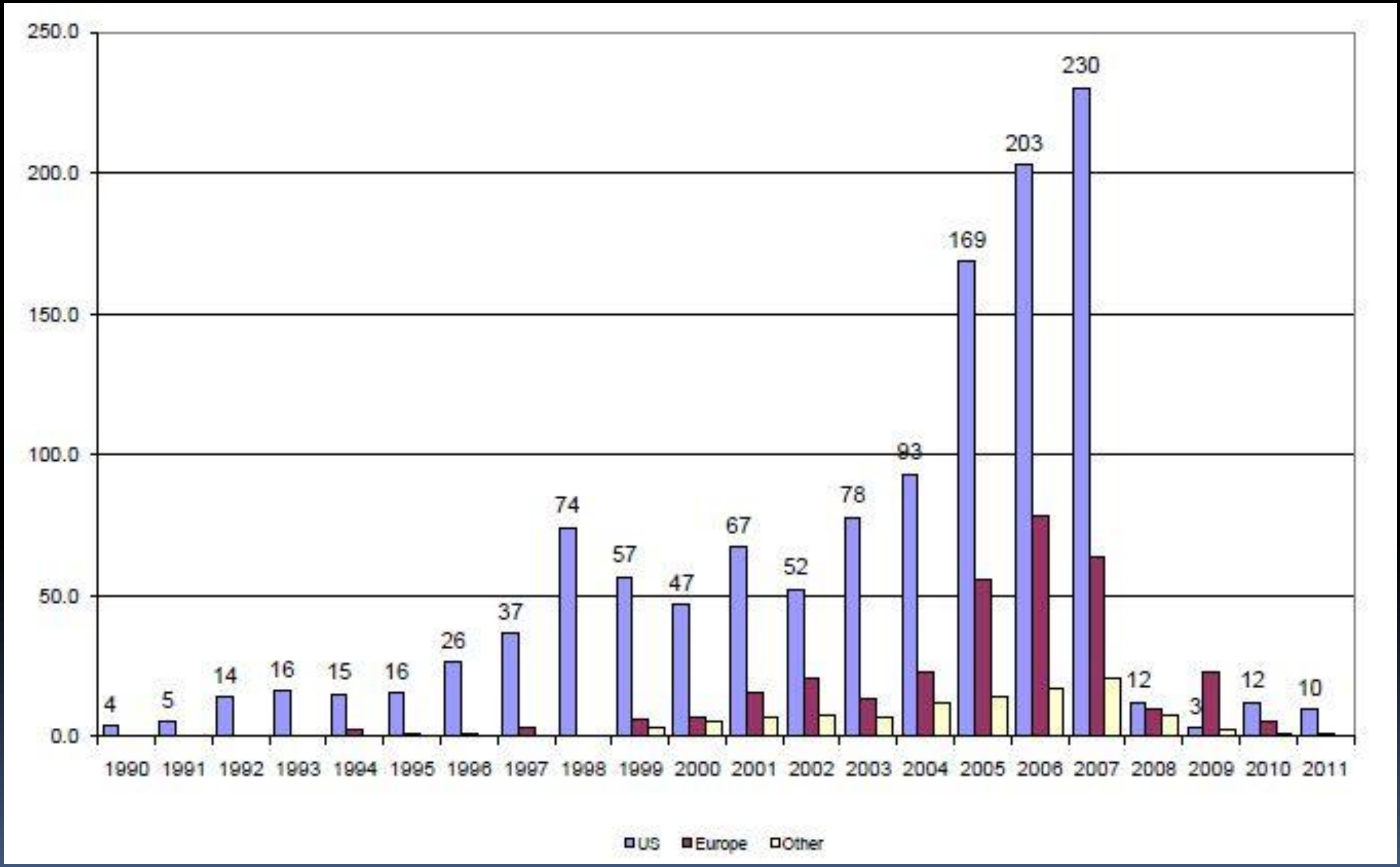
Source: NCREIF Total Return Index

Impact on Commercial Real Estate: REIT Annual Returns 2000 - 2011



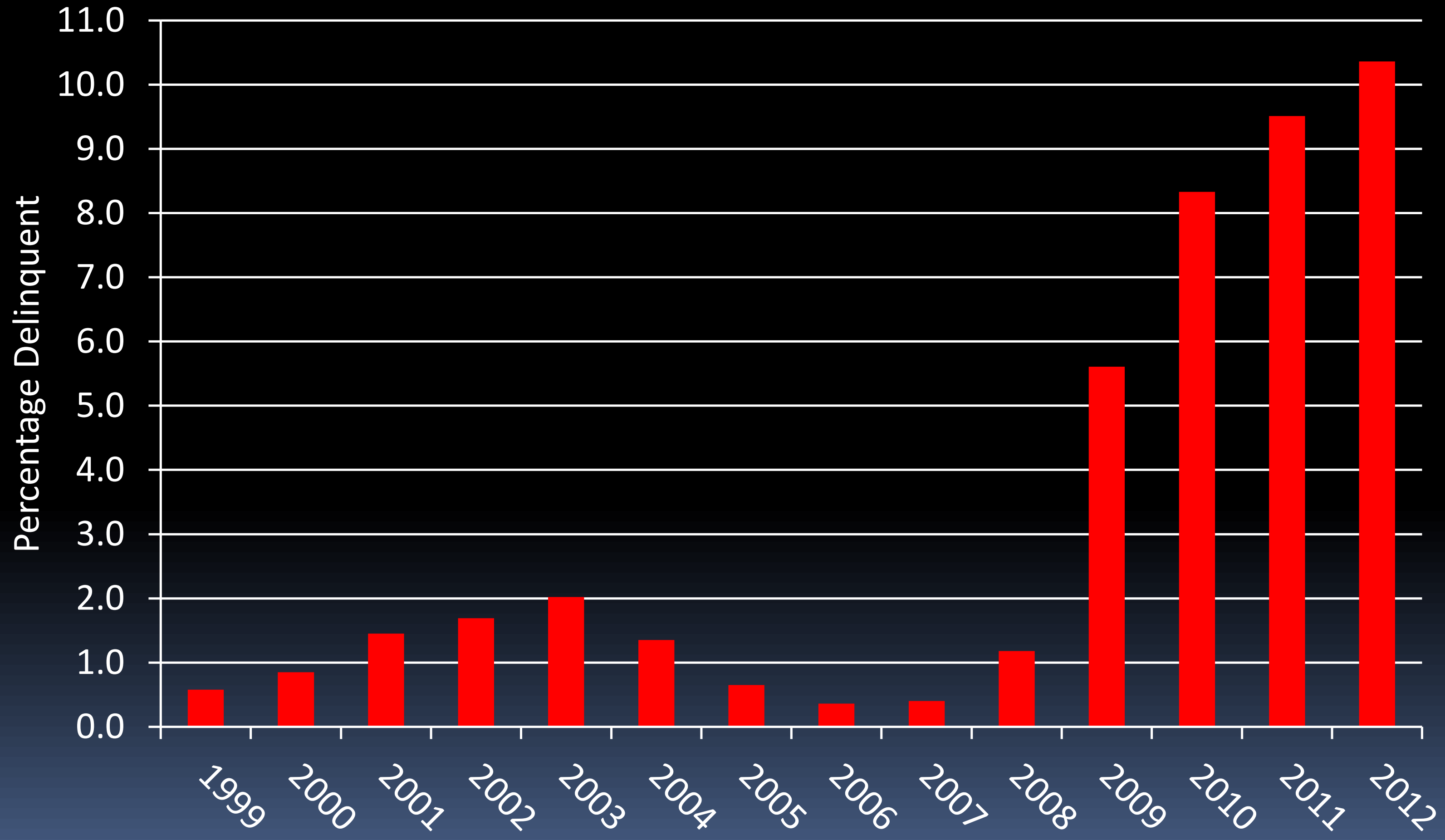
Source: FTSE NAREIT Total Return Index

Impact on Commercial Real Estate: CMBS Issuance Volume 1990 - 2011



Source: PRIA Compendium of Statistics

Impact on Commercial Real Estate: CMBS Delinquency Rates 1999 - 2012



Source: Trepp CMBS Analytics

The 2008 Banking Crisis:
Summary

- The 2008 banking crisis was precipitated by a housing market bubble that burst in 2008.
- This led to a massive recession and to massive losses on securities backed by residential mortgages.
- During t he 2008 banking crisis, almost 500 banks failed.
- Most were small community banks.

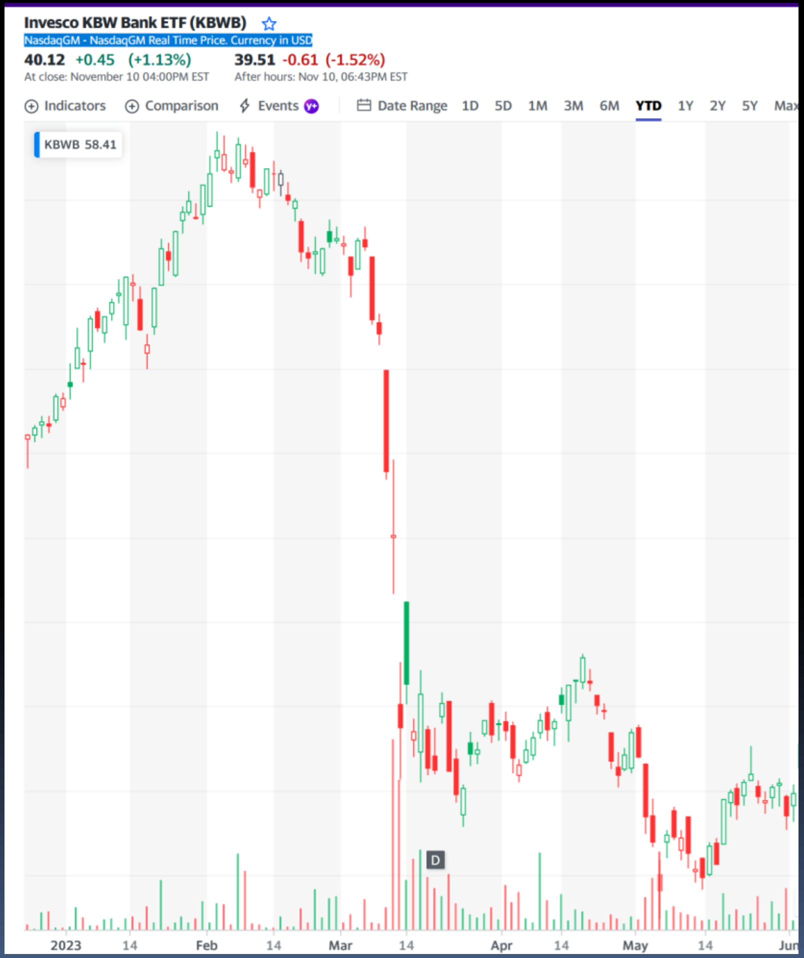
The 2023 Banking Crisis

The 2023 Banking Crisis: Silicon Valley Bank

- On the morning of Friday Mar. 10, 2023, Silicon Valley Bank was closed by its regulators, sparking a wave of contagion that threatened to spread throughout the banking system.
- With more than $200 billion in assets, SVB was the 13th largest bank in the U.S. and became the second largest U.S. bank failure at the time.
- The timing was especially surprising because regulators usually close a bank after 5 pm on a Friday so that they can work over the weekend for an orderly reopening the following Monday.
- The morning closure signaled how unprepared the regulators for this bank failure.

The 2023 Banking Crisis: Silicon Valley Bank

- The market also was caught off-guard by SVB’s closure.
- The Invesco KBW Bank ETF didn’t indicate a problem until Tue, Mar. 7th but then plummeted for five straight days, falling by 25%.



The 2023 Banking Crisis: Silicon Valley Bank

- What had stunned regulators was the speed with which depositors were withdrawing funds from the $200 billion bank.
- On Mar. 8, SVB announced a plan to raise new capital and raise cash by selling securities in response to concerns about unrealized losses on its more than $100 billion in securities, primarily RMBS.
- Unfortunately, depositors and investors viewed this a sign of weakness rather than strength.

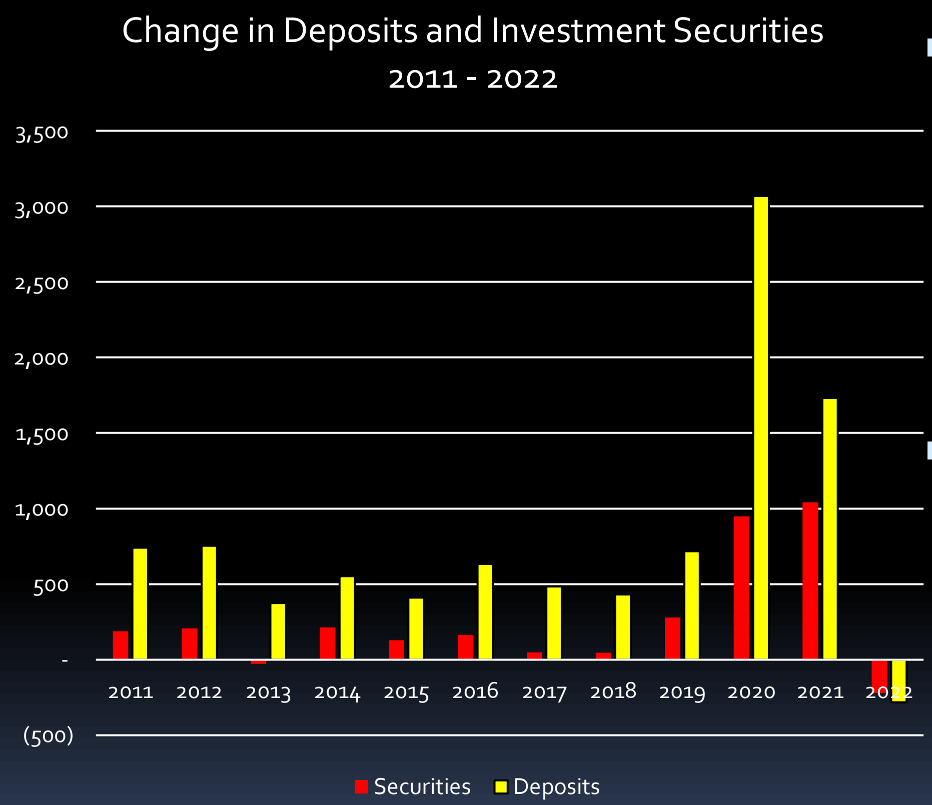
The 2023 Banking Crisis: Silicon Valley Bank

- On Mar. 9, SVB lost more than $40 billion in deposits, depleting its cash.
- Its management (and regulators) expected the bank would lose another $100 billion on Mar. 10, for a loss of more than 80% of its total deposits.
- By comparison, the 2008 failure of Washington Mutual, the largest U.S. bank failure, totaled only $19 billion over 16 days.
- The unprecedented speed of deposit withdrawals reflected the growing use of smart phones by bank customers to access and transfer bank funds.

The 2023 Banking Crisis: Silicon Valley Bank

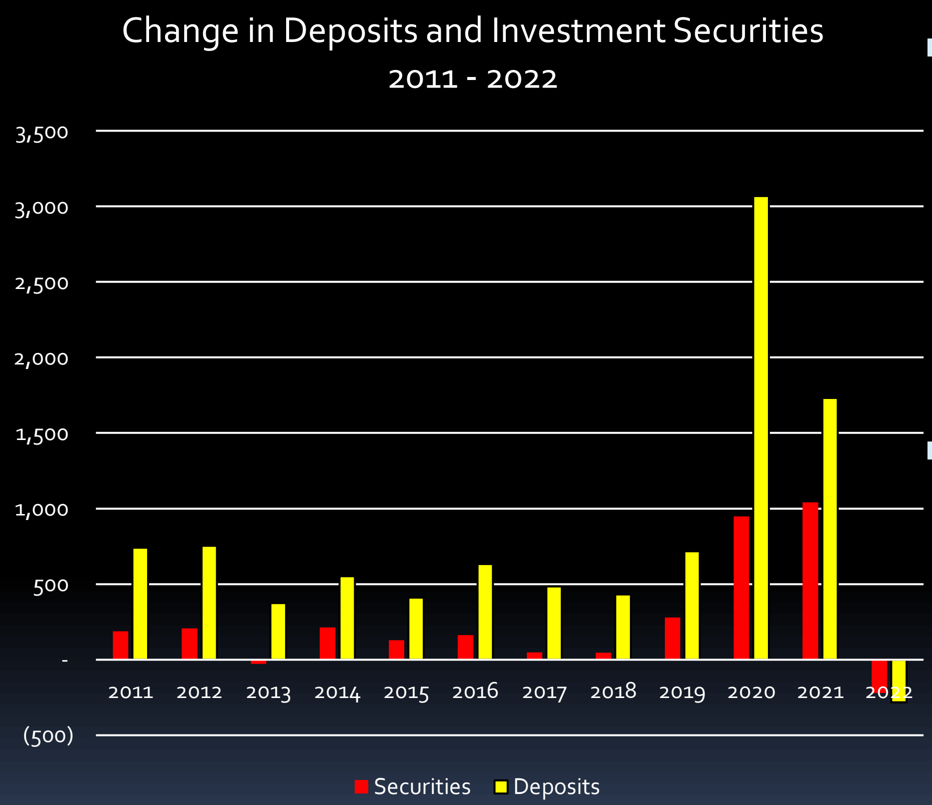
- In many ways, SVB was a “unicorn” that failed because of its unique business model, which catered to venture-capital-backed businesses in the San Francisco area.
- These businesses were very successful during the pandemic and flooded SVB with deposits, which tripled during 2020 – 2021.
- Most of these deposits were uninsured.
- SVB, like many other banks, invested these funds in long-duration Treasury Bonds and RMBS earning 1.5% - 2.5%.

The 2023 Banking Crisis:
Deposit Inflows during the Pandemic



- During 2020, total deposits grew by more than $3 Trillion, from $13 Trillion to $16 Trillion.
- During 2021, deposit grew another $2 Trillion.

The 2023 Banking Crisis:
Securities Inflows during the Pandemic



- More than $2 Trillion of the deposit inflows were invested in securities including RMBS.
- This increased the amount of investment securities by more than half, from $3.6 Trillion in 2019 to $5.6 Trillion in 2021.

The 2023 Banking Crisis:
Securities Inflows during the Pandemic

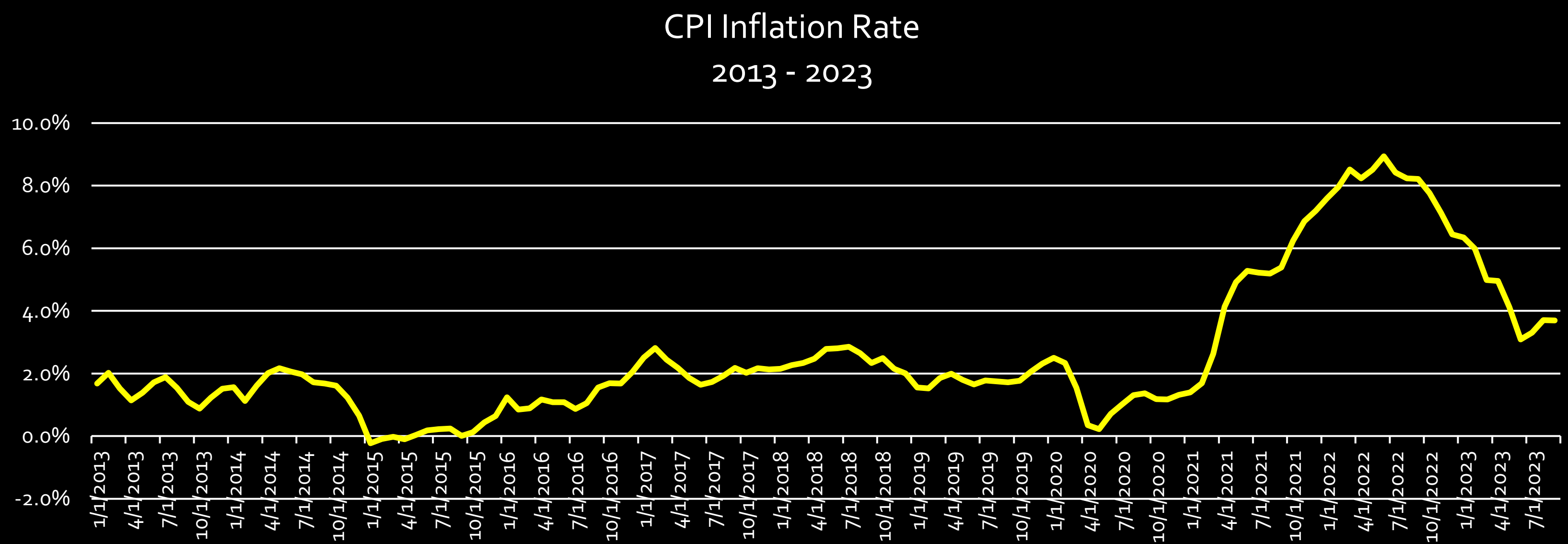
- Investing in long-duration securities during a time of rising inflation is a very risky strategy.
- If interest rates rise significantly, such securities can lose a significant percentage of value.
- For a bond with a duration of 10 years, each one-percentage point rise in rates leads to a loss of 10% in value.
- At the time, however, both the Fed and the Treasury were insisting that inflation was "transitory" and would quickly return to the 2.0% Fed target rate.

The 2023 Banking Crisis:
FRB FOMC Economic Projections: Dec. 2021

Variable	Median				
	2021	2022	2023	2024	Longer run
Change in real GDP	5.5	4	2.2	2	1.8
Unemployment rate	4.3	3.5	3.5	3.5	4
PCE inflation	5.3	2.6	2.3	2.1	2
Core PCE inflation	4.4	2.7	2.3	2.1	
Memo: Projected appropriate policy path					
Federal funds rate	**0.1**	**0.9**	**1.6**	**2.1**	**2.5**

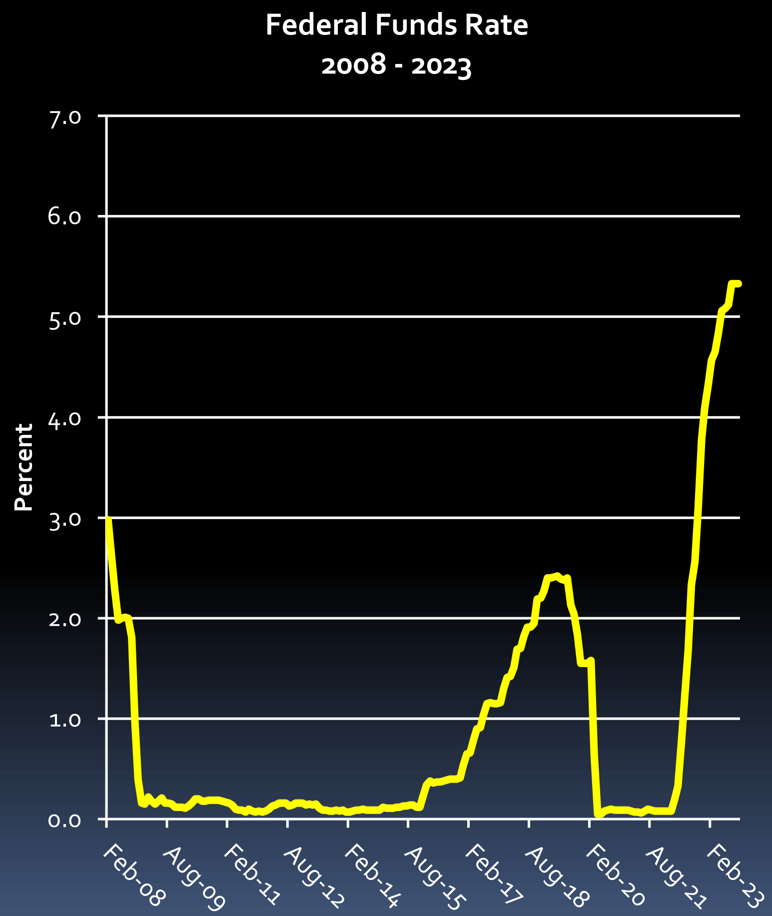
- In Dec. 2021, the FOMC published its economic projections for 2022 – 2024.
- It expected inflation to fall from 5.3% in 2021 to 2.6% in 2022 and to 2.3% in 2023.
- It expected the Fed Funds Rate to rise only modestly from 0.1% in 2021 to 0.9% in 2022 and 1.6% in 2023.

The 2023 Banking Crisis: Inflation



- Unfortunately, inflation was not "transitory" and rapidly accelerated during 2022, peaking at 8.9% in June. (Or maybe MUCH higher at 22%. Summers.)
- This forced the Fed to act in a decisive manner.

The 2023 Banking Crisis:
The Fed's Response to Rising Inflation



- Beginning in Mar. 2022, the Fed raised the target Fed Funds Rate from 0.08% to 5.33% in August 2023.
- This was the fastest rate increase in the Fed's history.

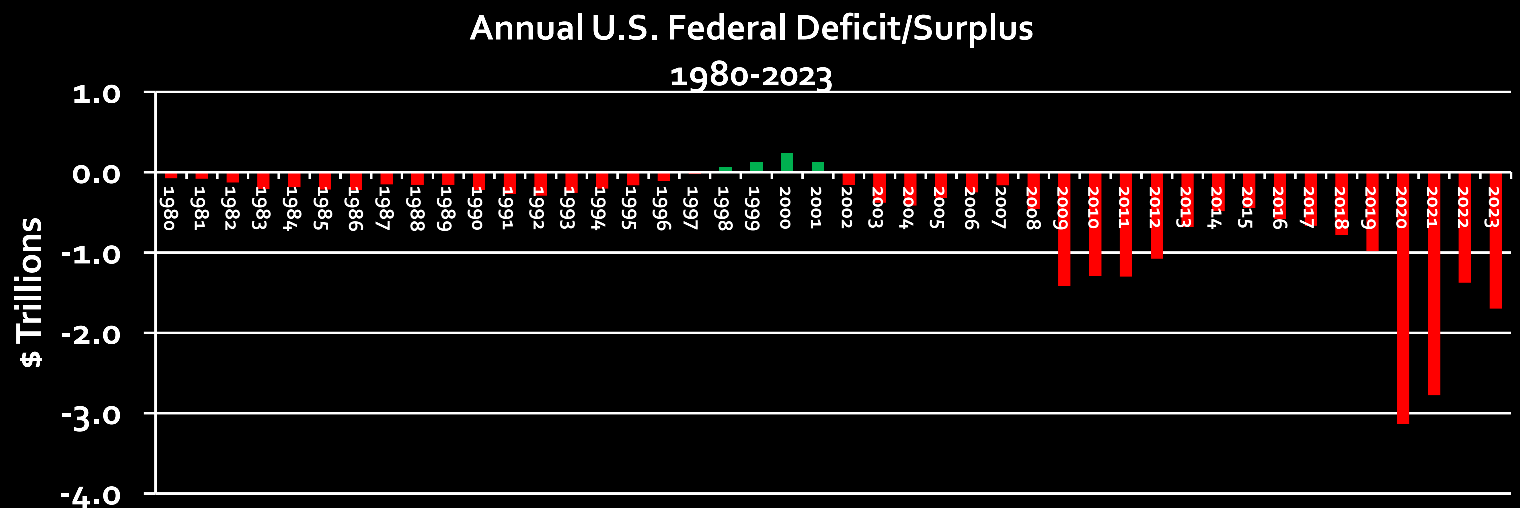
Source: Federal Reserve Economic Data (FRED)

The 2023 Banking Crisis:
The Bond Market's Response to Rising Inflation

- The Treasury-bond market already had been responding to rising inflation.
- Yield on 10-Year bond had risen to 2.0% before the first Fed rate hike in Mar. 2022.
- Since then, it has risen to 5.0% before retreating to 4.37%.

Source: Federal Reserve Economic Data (FRED)

The 2023 Banking Crisis:
Fiscal Stimulus



- Why was inflation spinning out of control during 2021 - 2022?
- Because of massive deficit spending during the pandemic period by the federal government.
- $6 Trillion during 2020-2021. Another $3 Trillion during 2022-2023.
- Much of this fiscal stimulus ended up as bank deposits.

The 2023 Banking Crisis: How did rising rates affect banks?

- The banks, which had been following the Fed's projections for interest rates, were caught flat-footed as T-bond yields rose during 2022 – 2023.
- Unrealized losses on their securities skyrocketed from only $28 billion in Q4 2021 to $470 billion in Q2 2022 and $690 billion in Q3 2022.
- These losses exceed 50% of regulatory capital at more than 500 banks, including 100 banks with more than $1 billion in assets.

The 2023 Banking Crisis: How did rising rates affect banks?

- "Interest rate risk hits a bank primarily on three parts of the asset side of it's balance sheet:
  - Investment securities:
    - RMBS, CMBS, Treasuries, Munis.
  - Loans:
    - Residential mortgages
    - CRE mortgages
      - Nonfarm Nonresidential
      - Multifamily
      - Construction & Development

The 2023 Banking Crisis: Silicon Valley Bank

- On paper, SVB looked to be a very safe and liquid bank—the last candidate for a deposit run.
- Securities are highly liquid assets that can quickly and easily be sold for cash to meet deposit withdrawal.
- Over half of SVB's $200+ billion in assets were in such liquid securities.
- SVB's Tier 1 regulatory capital ratio was a healthy 7.96%, amounting to more than $17 billion.

The 2023 Banking Crisis: Silicon Valley Bank

- However, hiding in plain sight during 2022, was what would cause SVB depositor run.
  - Unrealized losses on its securities portfolios caused by the unprecedented rise in interest rates engineered by the Fed during 2022.
  - These losses totaled $8 billion in Q1, $13 billion in Q2, $18 billion in Q3, and $17 billion in Q4.
  - So, by Q3, the unrealized losses were larger than the bank's regulatory capital.
  - But banks are not required to realize these losses as they can hold the securities to maturity.

The 2023 Banking Crisis: Silicon Valley Bank

- SVB's problem was that large uninsured depositors, primarily the VC-backed businesses, were worried about losing access to their funds and possibly losing a portion of those funds if SVB were to fail.
- A stunning 97% of SVB's deposits were uninsured.
- Once these depositors began to run, SVB was doomed.

The 2023 Banking Crisis: Silicon Valley Bank

- Where were the regulators?
  - SVB's primary regulator was the Federal Reserve.
- SVB was the largest bank for which the Fed was responsible.
  - As such, it was the responsibility of FRB-San Francisco.
  - As it turns out, the CEO of SVB was on the board of directors of FRB-SF up until Mar. 10, when it failed.

The 2023 Banking Crisis: Silicon Valley Bank

- Supervision staff at FRB-SF were on top of SVB's problems with governance and risk management, esp. interest-rate risk management.
- These weaknesses were documented by supervision staff going back to 2021, but they were repeatedly over-ruled by senior management, including FRB-SF CEO Mary Daly.
- Daly was focused on other priorities, primarily "climate change" and "DEI."

The 2023 Banking Crisis: Fallout from SVB's closure

- The combination of unrealized losses on securities and over-reliance on uninsured deposits was not unique to SVB.
- Many large regional banks had the same two issues, and depositors (and investors) immediately took note.
- Stock prices of regional banks plummeted on Friday, Mar. 10 and many of these banks began to experience their own depositor runs.

The 2023 Banking Crisis: Fallout for SVB's closure

- The combination of unrealized losses on securities and over-reliance on uninsured deposits was not unique to SVB.
- Many large regional banks had the same two issues, and depositors (and investors) immediately took note.
- Stock prices of regional banks plummeted on an after Friday, Mar. 10
- Many of these banks also began to experience their own depositor runs.

The 2023 Banking Crisis: Fallout from SVB’s closure

- The SVB contagion spread beyond banks with unrealized securities losses.
- Investors were very worried about banks with exposure to real estate or crypto and that also had large exposure to uninsured deposits.
- Two such banks were First Republic Bank and Signature Bank of NY.

The 2023 Banking Crisis: Signature Bank of NY

- Signature Bank of NY was the 19th largest bank in the U.S. at the time at $100 billion in assets and catered to crypto businesses.
- On Friday, Mar. 10, depositors withdrew more than $10 billion.
- Expected withdrawals on Monday, Mar. 13 led regulators to close the bank on Sunday, Mar. 12, making it the third largest bank failure in U.S. history, just two days after the failure of SVB.

The 2023 Banking Crisis: First Republic Bank

- First Republic Bank of NY was the 12th largest bank in the U.S. at the time with $212 billion in assets and had large real-estate exposures.
- FRB suffered large deposit withdrawals following the failures of SVB and SB, and its stock price plummeted more than 90%.
- In the short run, FRB was able to meet depositor withdrawals by borrowing $77 billion from the FRB and $28 billion from the FHLB.

The 2023 Banking Crisis: First Republic Bank

- First Republic Bank was able to limp along until Apr. 28, when it could no longer borrow additional funds from the FRB or FHLBB.
- Regulators closed FRB on May 1, with JP Morgan Chase acquiring most of its assets, making FRB the second largest bank failure in U.S. history.

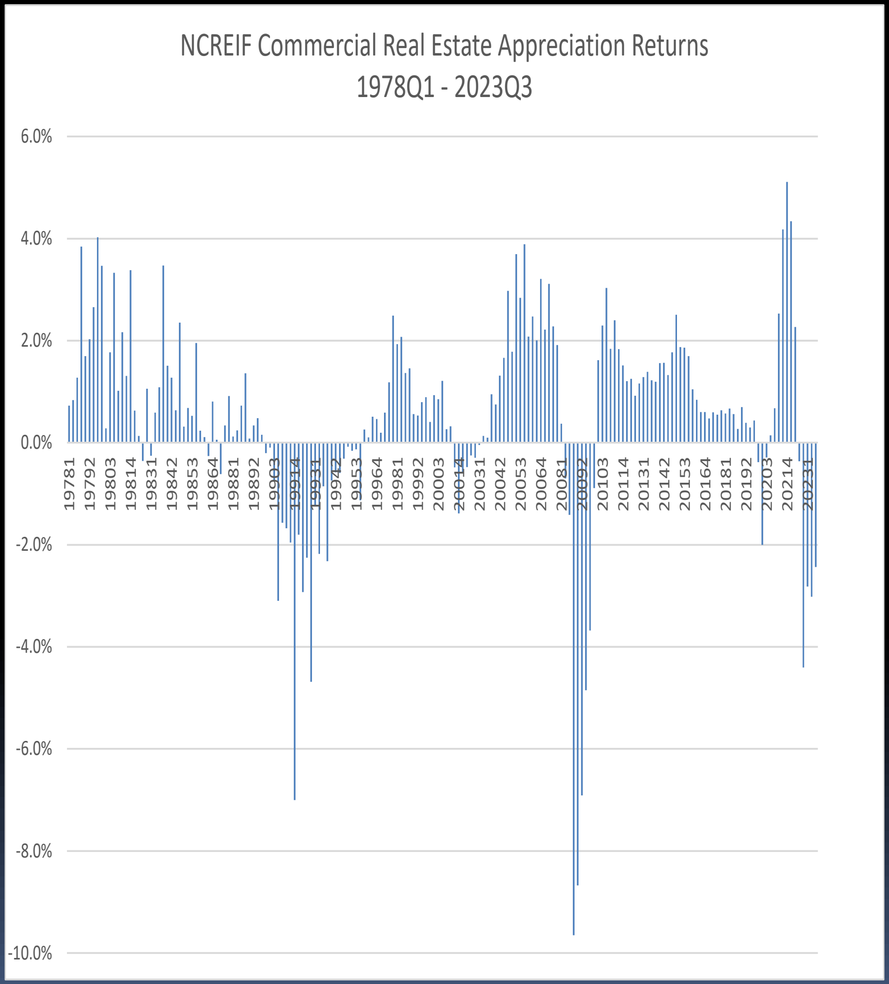
The 2023 Banking Crisis: Residential Mortgages

- Just as the rise in interest rates has savaged banks' security portfolios, so has it devaluated banks' portfolios of residential mortgages.
- As of Q2 2023, banks held $2.5 Trillion in residential mortgages, which primarily are 30-year fixed rate instruments.
- If the average losses on RMBS are indicative of unrealized losses on these mortgages, then these losses would amount to another $250 billion.

The 2023 Banking Crisis: Commercial Mortgages

- The rise in interest rates also is expected to inflict major losses on banks' portfolio of commercial mortgages, which total another $2.5 trillion.
- These are shorter duration, typically 5 years, but about half are maturing during the next 24 months and will need to be refinanced.
- Existing rates are 3-4% and have risen to 7-10% on new mortgages, which renders many of these properties cash-flow negative.

The 2023 Banking Crisis: Commercial Real Estate Appreciation



- This chart shows the quarterly change in CRE property values based upon the benchmark NCREIF index.
- Note that property values have only fallen three times in the past 45 years:
  - Early 1990s
  - 2008-2009
  - 2022-2023

The 2023 Banking Crisis: Commercial Mortgages

- Office properties are expected to be hit especially hard as most companies are only requiring workers to come into the office 2 or 3 days per week, and many remain fully remote.
- So office vacancy rates have skyrocketed, esp. in major U.S. cities.
- But other property types are still going to get hit by the huge increase in mortgage rates when they refinance.

The 2023 Banking Crisis: Commercial Mortgages

- Of the 156 banks with more than $10 billion in assets, 50 have CRE exposure greater than 300% of their regulatory capital.
- Among all 4,697 banks:
  - 1,646 have CRE exposure greater than 300%
  - 899 have exposures greater than 400%, and
  - 404 have exposures greater than 500%.
- Regulators consider 300% to be excessive asset concentration.

The 2023 Banking Crisis: Summary

- While only five banks failed during the 2023 banking crisis, as many as 1,000 are at risk from their exposures to securities and mortgages (both residential and commercial).
- These include more 50 banks with more than $10 billion in assets and more than 100 banks with more than $1 billion in assets.
- 2024 promises to be “interesting times” . . . .

Thank you!

Questions?