Statement before the House Committee on Financial Services
On “Dodd-Frank Turns 15: Lessons Learned and the Road Ahead.”

The Dodd-Frank Act at 15: Has it worked?

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1. Introduction

Chairman Hill, Ranking Member Waters, and distinguished members of the Committee, thank you for convening today's hearing, "Dodd-Frank Turns 15: Lessons Learned and the Road Ahead," and for inviting me to testify today.

My name is Paul Kupiec. I am a senior fellow at the American Enterprise Institute. This testimony represents my personal views and not the views of the AEI. It is an honor for me to be able to testify before the subcommittee today.

My background in financial market supervision and regulation includes 40 years as a professional economist specializing in financial market policies, risk measurement and banking regulation. I have held senior positions at the Federal Reserve Board, the FDIC, the IMF, Freddie Mac, the BIS and JPMorgan before joining the American Enterprise Institute.[1]

I will begin my written testimony by summarizing my findings.

Judging the Dodd-Frank Act by its own preamble, the Act is a failure. Notwithstanding the many complex and intrusive provisions of the Act, the financial system experienced a systemic banking crisis in March 2023. Widespread bank runs were averted when the federal government was forced to take measures to bailout the banking system.

The crisis was caused by depositor runs at several large banks. The runs ultimately resulted in these banks' failure. The underlying causes of the depositor runs were large unrealized interest rate driven losses that should have been proactively detected and remediated by the FSOC and federal banking regulators using the extensive prompt corrective action powers granted in the Dodd-frank Act and in prior federal legislation.

The crisis required the Secretary of the Treasury to provide depositors in the failing institutions with assurances of a blanket deposit insurance guarantee and a $25 billion first-loss backstop for a Federal Reserve emergency lending program that was required to bail out the remaining banks in the system. The so-called Bank Term Funding Program liquefied banks by making more than 9,800 loans on bank collateral pledged from bank held-to-maturity investment portfolios. The pledged collateral had very

[1] I have also separately submitted the most up to date curriculum vitae I have available, which unfortunately is current only up to December 2023. My AEI webpage includes additional research papers essays and op ed from 2024 and 2025. See, https://www.aei.org/profile/paul-h-kupiec/

large market-value discounts as a consequence of increased interest rates, but the Bank Term Funding Program loaned banks the full par value of the collateral for periods up to a year. By some estimates, at its peak, this program had outstanding loan balances of about $165 billion, with the Fed lending banks about $20 billion more than the market value of the collateral pledged, all at favorable interest rates.[2]

The decision to fully bailout very large sophisticated uninsured depositors and assign the resulting losses to the Deposit Insurance Fund (DIF), and ultimately to large banks through special DIF assessments, does not represent the "improved accountability" the Dodd-Frank Act's authors promised to deliver. The decision to insure all deposits regardless of deposit size generated very large DIF losses compared to the DIF losses that would have been generated if the failed banks had been resolved using standard least-cost FDIC receivership rules. The federal banking regulators who failed in their oversight responsibility assigned the cost of the resulting DIF receiverships to large banks that were not responsible for the poor management at the institutions that failed and triggered the crisis.

The unorthodox and opaque method used to fund the failed bank receiverships substantially added to the losses to the DIF, additional losses that were imposed on large banks through special DIF assessments. Moreover, the reasons behind the use of the unorthodox method for funding these bank receiverships highlight important shortcomings in both Title II of the Dodd-Frank Act and the FDI Act—shortcomings that, to the best of my knowledge, have not received the attention they merit given the issues and costs they could create in future financial crisis.

The past 15 years have repeatedly demonstrated that the Financial Stability Oversight Council (FSOC) has little ability to detect and mitigate actual risks created by so-called systemically important financial institutions or unregulated financial market activities. The FSOC failed to identify and take timely measures to control the excessive level of interest rate risk in the banking system, risk that ultimately materialized and required the Secretary of the Treasury to declare a systemic risk exception in March 2023.

The FSOC's systemically important institution designation power has been successfully challenged in court and the target of its disputed designation, Metlife, continues to be one of the largest, if not the largest,[3] life insurance and annuity underwriter. It continues to operate profitably without Federal

[2] The estimate is from the Bank Policy Institute. See, https://bpi.com/bank-term-funding-program-experience-and-lessons-learned/#:~:text=The%20BTFP%20provided%20loans%20to%20financially%20sound,was%20providing%20over%20$165%20billion%20in%20loans.

[3] https://www.iii.org/fact-statistic/facts-statistics-insurance-company-rankings

Reserve Board enhanced oversight years after the FSOC designated it as a potential systemic risk to the financial sector.

The FSOC's attempts to regulate financial market activities—for example preventing the financing of so-called "brown industries"—have been conducted to serve a political agenda rather than to address any real demonstrable risk in the financial sector. The political nature of the FSOC's activities raise the cost of financial intermediation. Financial institutions incur costs as they must adapt their activities when the FSOC changes the "rules of the road" each time a new party takes executive power. The FSOC should be stripped of its powers to designate and regulate, and instead be assigned a purely advisory role. Congress should reserve the right to designate and regulate through appropriate debate and legislation.

While the Dodd-Frank Act failed in its primary goal of preventing a systemic financial crisis, my testimony will show that its many provisions did impact financial intermediation, particularly in regard to the operations of the large complex institutions on which the Dodd-Frank Act imposed enhanced supervision and regulation by the Federal Reserve Board. In conjunction with fundamental changes in the Federal Reserve's approach to implementing monetary policy, the provisions of the Dodd-Frank Act substantially increased the largest banks' use of deposit funding at the expense of reductions in the use of subordinated debt, federal funds borrowing, and Federal Home Loan Bank advances. This change in funding has effectively substituted regulatory oversight for active market monitoring by lenders that had actual "skin in the game".

Faced with new stringent regulatory capital and liquidity requirements and near-zero short term interest rates, the largest banks rebalanced their asset holdings away from loans to businesses and consumers and toward investments in liquid federal government-guaranteed securities and Federal Reserve interest-bearing deposits. Smaller banks not subject to Dodd-Frank Act enhanced supervision and regulation did not make similar adjustments in their investment strategies.

The analysis in my testimony will show that the enhanced bank minimum capital regulations imposed by federal bank regulatory agencies as required by the Dodd-Frank Act completely fail to account for unrealized interest rate losses. As the Fed began raising rates in 2022 to fight a persistent inflation, unrealized interest rate losses were building in the banking system. While unrecognized on bank balance sheet positions held at historical cost and when bank calculate their regulatory capital, these losses erode the true market value (the loss-absorbing capacity) of the regulatory capital levels banks report. The FSOC and federal banking regulators, to the extent that they recognized this risk, took no action to require banks to hedge this risk. By the end of 2022, more than a thousand banks were severely

undercapitalized after adjusting their reported regulatory capital levels for the true market value of their assets, including many large institutions and those whose failure triggered the March 223 banking crisis.

Consistent with the finding of a 2017 US Treasury study, my analysis shows that the Dodd-Frank Act measures taken to reduce the risks created by poorly underwritten securitizations and associated credit risk transfer activities have resulted in declines in the use of private-label securitizations and re-securitizations as vehicles to fund the economy's loan and debt security liabilities.

Whether or not securitization trends are problematic depends on whether the enhanced regulatory capital requirements and risk retention rules required by the Dodd-Frank Act are preventing soundly underwritten asset-backed security (ABS) issuance or just preventing risky securities from being issued. Given the data available to me, I have not been able to address this important distinction. However, when it comes to federally guaranteed mortgage-backed securities (MBS) issuance, there is evidence that the Dodd-Frank Act qualified mortgage risk retention rules have not kept federal housing GSE's from increasing the riskiness of the mortgage collateral that supports the MBS they issue.

Given the aforementioned prevalence of unrealized interest rate losses throughout the banking system, the March 2023 failure of SVB and Signature Bank created the risk of widespread depositor runs. The government responded by declaring a systemic risk exception which provided a blanket guarantee for all depositors in SVB and Signature Bank, an action that raised the cost of these bank resolutions. It turned out that SVB's holding company had close to $2 billion in deposits in SVB bank that went undetected by the FDIC when drafting the terms of the systemic risk exception, and the ownership of these deposits remains in legal dispute today. The FDIC is apparently claiming that the Federal Reserve holding company "source of strength doctrine" gives the Deposit Insurance Fund receivership ownership rights over the holding company's deposit, but the Fed's source of strength power has never been upheld in court.

The Dodd-Frank Act created Orderly Liquidation Authority (OLA) and gave federal authorities the power to take SVB's holding company into an FDIC receivership, liquidate its assets, and use the proceeds to support its distressed insured depository. In effect, the OLA is a turbo-charged source-of-strength power, and yet it was not invoked in the case of SVB. Its use, should the OLA have functioned as advertised, would have reduced SVB's resolution cost to the DIF by billions of dollars. I have not seen any public discussion that explains why the OLA was not used in the case of SVB. In my testimony, I suggest some reasons why the OLA may not have worked in the way the Dodd-Frank Act envisioned and explain how DIF and OLA legal access to funding may need to be modified to ensure OLA is possible and

to avoid future excess losses to DIF.

An outline of my Testimony Follows. Section 2 discusses the primary policies, federal agencies and financial regulations that had a role in creating the risks whose realization caused the Great Financial Crisis. Section 3 discusses provisions of the Dodd-Frank Act that were designed to control the sources of risk identified in Section 2. Section 4 discusses the impact that selected Dodd-Frank Act provisions have had on financial market intermediation 15 years after the Act became law.

2. Federal policies, agencies, regulations and the Great Financial Crisis

This section will discuss key government programs, agencies, and financial regulatory features in place prior to the 2008 financial crisis that created strong incentives for insured banks, investment banks, insurance companies and GSEs to take on excessive concentrations in residential mortgage risk and to issue poorly underwritten subprime mortgage-backed securities (MBS), hold highly-rated subprime MBS tranches as investments, purchase lower-rated subprime MBS tranches to engage in re-securitization transactions, and to write credit derivative contracts on tranches of subprime MBS securities. In many cases, the government agencies involved experienced large losses as a consequence of the exposures they assumed, and in some cases required emergency government assistance to continue operating.

The underlying causes of the Great Financial Crisis include:

- Unrecognized inadequacies in bank and investment bank minimum regulatory capital requirements
- Government programs and special purpose federal government agencies chartered to encourage and subsidize residential mortgage lending
- Government requirements to satisfy minimum "affordable housing lending goals"
- A pervasive decline in residential mortgage underwriting standards abetted by the growth of low down payment, interest only, and low documentation loans that encouraged excessive borrower leverage
- Unscrupulous and inaccurate securities ratings assigned by Nationally Recognized Statistical Rating Organizations (NRSROs)
- Financial regulatory agencies' general incognizance regarding the true underlying incentives driving subprime mortgage originations, securitizations, and re-securitization activity.

Subprime mortgage originations and a host of subprime related loan and capital market innovations ultimately created excessive financial sector leverage and unrecognized exposure concentration to the risks and ultimately to the losses created by poorly underwritten subprime mortgages.

It is important to recognize that all of the capital market activities that took place prior to the 2008 financial crisis took place within the scope of then existing laws, regulations, and with the full knowledge—

if not the full understanding—of bank and other financial regulatory agencies. Post-crisis legal cases have argued that the lack of due diligence in screening the subprime mortgage collateral used in securitization transactions bordered on financial fraud, but few if any officials were publicly questioning the adequacy of subprime securitization practices prior to the onset of the crisis. Moreover, in the boom years leading up to the financial bust—the time when excessive leverage and risk concentrations were building in the financial system —economists, including economists at important domestic and international regulatory agencies, argued that the securitization activity and other credit risk transfer activities associated with the structured subprime MBS market produced net benefits for the financial system, including reducing risk in the banking system.

2.1 The Federal Home Loan Bank System

For nearly 100 years, federal government institutions and regulations intentionally encouraged depository institutions to concentrate their investments in loans and activities that supported the residential mortgage market. The Federal Home Loan Bank Act of 1932 created the Federal Home Loan Bank (FHLB) System. Modeled after the Federal Reserve System, the Act created 12 district FHLB banks owned by member institutions who purchased shares in their district FHLB bank. Membership was originally restricted to financially sound building and loan associations, savings and loan associations, cooperative banks, homestead associations, insurance companies, or savings banks that made home mortgages.[4]

FHLB membership allowed an institution to borrow (using so-called FHLB advances) from their Home Loan Bank at favorable rates. Initially, advances had to be collateralized by residential mortgages, but the list of acceptable collateral expanded over time.[5] Unlike Federal Reserve discount loans, FHLB advance terms are flexible. Advances can have long maturities and customized terms.

Federal Home Loan Banks are able to borrow at favorable rates by virtue their ability to issue bonds with interest that is free from state and local taxes and with only a small interest rate premium over U.S. Treasury rates given the system's statutory $4 billion line of credit with the U.S. Treasury and their status as a government sponsored enterprise.[6] FHLB member institutions implicitly benefit from the FHLB's ability to borrow cheaply in the form of loan advance rates that are more favorable than market

[4] https://fraser.stlouisfed.org/title/federal-home-loan-bank-act-5998?page=2

[5] The original Act included many restrictions mortgages must have satisfied to be acceptable as FHLB collateral. For a current list of acceptable collateral for advances, see https://www.congress.gov/crs-product/R46499#:~:text=The%20ability%20of%20the%20FHLBs,privileges%20for%20the%20FHLB%20system.&text=Congress%20has%20given%20the%20Federal,%C2%A777c).

[6] https://www.schwab.com/learn/story/us-agency-bonds-what-you-should-know

repurchase rates on mortgages, and from member dividend earnings on their FHLB shares.[7]

In 1987, the Competitive Equality Banking Act introduced a requirement that savings and loan depositories satisfy a Qualified Lender Test which encouraged depositories to increase to their concentration in residential mortgage related investments. To satisfy the test, a thrift had to hold 60 percent of its total tangible assets in "qualified thrift investments" which could include loans, equity positions, or securities related to domestic residential real estate or manufactured housing, Federal Home Loan Bank stock, certificates of deposit, and investments in real estate partnerships and corporations.

The consequence of a thrift's failure to satisfy the Qualified Lender Test included: (1) prohibiting the thrift's holding company from partaking in a broad range of profitable business opportunities otherwise available to a holding company owning a single thrift that satisfied the Qualified Lender Test[8]; and (2) limiting the thrift's eligibility for Federal Home Loan Bank advances.[9] Residential mortgage-backed securities did (and still do) count toward satisfying the qualified thrift lender test.[10] In the years prior to the 2008 financial crisis, the qualified lender test required a thrift institution to invest 65 percent of its assets in qualified investments which could include subprime residential mortgage-backed securities without limit.[11]

In 1989, the Financial Institutions Reform, Recovery, and Enforcement Act opened FHLB membership to all depository institutions holding more than 10 percent of their assets in residential mortgage-related assets. Subsequently, many banks joined the FHLB system and were eligible to borrow from the system.[12,13] As a result of changes in FHLB membership requirements, FHLB membership increased from

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[7] See, https://www.congress.gov/crs-product/R46499#:~:text=The%20ability%20of%20the%20FHLBs,privileges%20for%20the%20FHLB%20system.&text=Congress%20has%20given%20the%20Federal,%C2%A777c).

[8] Certain activities that are permissible for a savings and loan holding company, such as acquiring, developing, improving, managing, and maintaining real estate, are generally not permissible for a bank holding company. See: https://www.fdic.gov/regulations/applications/resources/apps-proc-manual/section-11-1-savings-association-designations.pdf, section 11.1.

[9] https://www.gao.gov/assets/ggd-91-24.pdf

[10] https://www.federalreserve.gov/supervisionreg/srletters/sr1709.htm

[11] FIRREA set the Qualified Thrift Test threshold at 70 percent. Sec. 437 of the Federal Deposit Insurance Corporation Improvement Act of 1991 reduced the threshold to 65 percent. https://fraser.stlouisfed.org/title/federal-deposit-insurance-corporation-improvement-act-1991-415

[12] https://www.federalreserve.gov/econres/notes/feds-notes/the-increased-role-of-the-federal-home-loan-bank-system-in-funding-markets-part-1-background-20171018.html

[13] At present there are also "Community Support Requirements" that a member institution must satisfy to maintain access to Federal Home Loan Bank advances. See: https://www.fdic.gov/resources/bankers/affordable-mortgage-lending-center/guide/part-3-docs/advances.pdf

3,200 institutions in 1989 to more than 6,400 members as of March 2025[14]. Over this period, total FHLB system assets, heavily weighted toward member institution advances, federal funds sold, and securities held for repurchase agreement loans, increased from $175 billion to $1.25 trillion.[15,16]

In the years leading up to the 2008 financial crisis, several FHLBs purchased private label subprime MBS for their investment portfolios. Several FHLB district banks posted losses in 2009 as a result of losses on their subprime MBS investments. The Seattle FHLB was ultimately forced to merge with the Des Moines FHLB as a consequence of Seattle's subprime MBS investment losses and the failure of Washington Mutual, its largest customer accounting for almost one-third of the Seattle FHLB's business prior to the thrift institution's failure.[17]

2.2 Fannie Mae and Freddie Mac

In 1938, Congress created a new federal agency, the Federal National Mortgage Association or Fannie Mae, to purchase residential loans guaranteed by the Federal Housing Administration (FHA) from mortgage lenders. In 1948, Fannie Mae also began purchasing mortgages insured by the Veteran Administration (VA). Fannie Mae financed these purchases by issuing federal government guaranteed bonds.

In 1968, the Congress created Ginnie Mae to guarantee timely principal and interest payments on mortgage-backed securities backed by pools of mortgages insured by the FHA, VA and other federal government mortgage guarantee programs. At the same time, Fannie Mae ownership was "privatized". Its mortgage investments shifted focus to conventional mortgages (non-government guaranteed or insured mortgages) and its debt was no longer explicitly guaranteed by the federal government or consolidated in federal government accounts. Privatization made Fannie Mae's bonds and mortgaged-backed securities only implicitly guaranteed by the federal government by virtue of an explicit multi-billion line of credit with the U.S. Treasury and its status as a "too-big-to-fail" government sponsored enterprise. Through the 1970s and into the 1980s, Fannie Mae primarily purchased conventional mortgages for its retained portfolio and financed them by issuing debt. Fannie Mae issued its first pass-through guaranteed MBS in 1981.

[14] https://www.fhfa.gov/data/fhlb-membership
[15] https://www.fhlb-of.com/ofweb_userWeb/resources/2025Q1CFR.pdf
[16] At year-end 2007, the FHLB system had 8,075 member institutions. See, for example, https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr357.pdf
[17] https://www.congress.gov/crs-product/R46499

In 1970, Congress created the Federal Home Loan Mortgage Corporation or Freddie Mac. Freddie Mac share ownership was originally restricted to the 12 district Federal Home Loan Banks and to Federal Home Loan Bank member institutions. It was created to assist the savings and loan industry in diversifying its real estate risks and to augment mortgage market liquidity by purchasing conventional mortgages with at least a 25 percent down payment (at most a 75 percent loan-to-value ratio) unless the remaining 25 percent exposure was covered by private mortgage insurance or another acceptable means of protecting the GSE from loss in the event of loan default. It would then use purchased mortgages to create pass-through MBS with guaranteed principal and interest payments and sell them to savings and loans, banks and other investors. It issued its first conventional mortgage-backed MBS in 1971. Throughout the 1970s and 1980s, Freddie Mac primarily purchased conventional mortgages to securitize.

In 1989, Congress removed the restriction on Freddie Mac share ownership and it became a publicly listed company and yet, like Fannie Mae, it retained its implicit federal government guarantee by virtue of its $2.25 billion line of credit with the U.S. Treasury and its status as a "too-big-to-fail" government sponsored enterprise.

Unlike Fannie Mae, Freddie Mac did not initially maintain a large retained portfolio of conventional mortgages financed by debt so it avoided the 1980s interest rate losses suffered by Fannie Mae and hundreds of savings and loan institutions.

From the early 1990s, Fannie Mae and Freddie Mac were direct competitors in purchasing conventional mortgages both to securitize as well as to hold for income in their retained portfolios. The Federal Housing Enterprises Financial Safety and Soundness Act of 1992 made both housing GSE's subject to safety and soundness oversight by the Office of Federal Housing Enterprise Oversight (OFHEO). Moreover, the Act also amend their charters to add an "affirmative obligation to facilitate the financing of affordable housing for low-income and moderate-income families."[18]

The GSE's affordable housing goals were set by the US Department of Housing and Urban Development (HUD). They required both GSE to increase the share of their yearly mortgage purchases made in three affordable housing categories: (1) a low-and moderate-income housing goal; (2) a special affordable housing goal; and, (3) a central cities, rural areas, and other underserved areas housing goal. The Act specified the characteristics HUD could use to specify loans that could be purchased to satisfy each of the

[18] U.S. Code Title 12, Ch 46, Sec 4501. Section 1302(7) of Housing and Community Development Act.

affordable housing goals.[19]

Under the Clinton and the Bush administrations, HUD continually increased the GSEs' annual required minimum share of affordable mortgages purchases until the minimum shares peaked at 56%, 27% and 39%, respectively during the Bush administration.[20]

To meet their affordable housing goals, over time, the GSEs had to lower their minimum underwriting standards for the conventional loans they purchased.[21] Initially they lowered underwriting standards to allow the purchase of mortgages with low down payments and higher loan-to-value and debt service to income ratios. HUD changed the affordable housing rules to allow GSEs to purchase subprime mortgages from low-income borrowers to meet their affordable housing goals.[22] Eventually the GSE's underwriting standards were further lowered to allow an increased share of adjustable rate, interest only, mortgages with implicitly more than 100 percent loan-to value ratios,[23] and Alt-A mortgages including loans with minimal documentation concerning borrowers' ability to repay. The relaxation of GSE mortgage underwriting standards was mirrored in the wider market that supplied mortgages for private-label subprime MBS securitizations. In 2005 and 2006, subprime mortgages originations exceeded $450 billion and accounted for roughly 20 percent of all residential mortgages originated.[24]

Fannie Mae and Freddie Mac also purchased a large amount of private-label subprime mortgage-backed securities in part to satisfy their HUD affordable housing goals.[25] Ultimately, losses on their subprime mortgage investments and MBS guarantees required the Federal Housing Finance Agency to place the GSEs into conservatorship and request and receive (initially) a commitment for $200 billion in financial support from the U.S. Treasury in the form of special preferred stock purchase agreements.[26]

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[19] A single mortgage loan could be used to satisfy more than one GSE affordable housing goal.
[20] https://oversight.house.gov/wp-content/uploads/2012/02/20100512affordablehousingpolicyandthefinancialcrisis.pdf
[21] https://oversight.house.gov/wp-content/uploads/2012/02/20100512affordablehousingpolicyandthefinancialcrisis.pdf
[22] https://oversight.house.gov/wp-content/uploads/2012/02/20100512affordablehousingpolicyandthefinancialcrisis.pdf, page 10.
[23] Borrowers were allowed to fund their primary loan down payment and closing costs with a second lien mortgage. See, for example, https://www.fhfa.gov/sites/default/files/2023-05/HMG_MAE_-_2006_AHAR.pdf
[24] https://realestate.wharton.upenn.edu/wp-content/uploads/2017/03/632.pdf
[25] See for example, https://oversight.house.gov/wp-content/uploads/2012/02/20100512affordablehousingpolicyandthefinancialcrisis.pdf, or https://www.fhfaoig.gov/Content/Files/History%20of%20the%20Government%20Sponsored%20Enterprises.pdf
[26] U.S. Treasury commitment to support the GSE conservatorships was subsequently increased to $200 billion each in May 2009. See, https://www.congress.gov/crs-product/R44525

2.3 Bank Minimum Regulatory Capital Requirements

The Basel I minimum regulatory capital requirements, which became effective in 1993, included important incentives that encouraged depository institutions to invest in subprime MBS. Basel I was comprised of minimum regulatory capital requirements for bank credit risk that, in part, set risk weights on bank bond investments according to a bond's credit rating as determined by a Nationally Recognized Statistical Rating Organizations (NRSROs).[27] Basel I credit risk capital requirements were subsequently supplemented with Basel I market risk capital requirements that applied to securities held in a bank's trading book and by rules that set minimum capital requirements for securitization transactions and direct credit substitutes. These Basel I minimum regulatory capital rules created strong incentives for depository institutions to hold MBS instead of holding whole mortgage loans, including strong incentives to hold tranches of subprime private-label MBS.

Highly-rated tranches of subprime MBS securities promised higher yields than equivalent maturity U.S. Treasury securities and their NRSRO investment grade credit ratings created the perception that the MBS had very low default risk. Banks that were approved to have trading books could purchase bonds issued by tranches of subprime MBS and receive market risk regulatory capital treatment instead of credit risk "banking-book" treatment. By holding subprime MBS in their trading books, banks could leverage the yield on these bonds far in excess of the effective yields produced by whole mortgage loans held by the bank in their so-called banking book and subject to Basel I minimum credit risk capital requirements.

Prior to the Great Financial Crisis, Basel I capital rules included Basel I credit risk capital requirements, the Basel Market Risk Amendment for securities held in a bank's trading book,[28] and the Amendment for The Capital Treatment of Recourse, Direct Credit Substitutes and Residual Interests in Asset Securitizations, a rule that established minimum capital rules for bank loan sales and securitizations.[29]

Under the Basel I credit risk capital rules,[30] residential mortgage loans held by a depository on a "held-to-maturity" basis would be subject to a 50 percent risk weight. Basel I required the institution to maintain a minimum 8 percent risk-weighted capital ratio. For each $100 in residential mortgage loan balances the bank held on its balance sheet in its so-called banking book, it would have to maintain $4 in qualifying regulatory capital which was comprised of equity, qualifying reserves, qualifying hybrid capital

[27] The most important NRSROs were Standard and Poor's Corporation, Moody's, and Fitch.
[28] https://www.govinfo.gov/content/pkg/FR-1996-09-06/pdf/96-22546.pdf
[29] https://www.federalregister.gov/documents/2001/11/29/01-29179/risk-based-capital-guidelines-capital-adequacy-guidelines-capital-maintenance-capital-treatment-of
[30] https://www.bis.org/publ/bcbs04a.pdf

instruments and subordinated debt within prescribed regulatory limits.[31]

The Basel Market Risk Amendment took effect at the end of 1997. The Amendment specified capital requirements for securities held in a bank's trading book. Trading book securities had to be market-to-market daily. Their minimum capital requirement was determined by a value-at-risk calculation using either daily or ten-day security price changes. The institution was required to hold capital based on a (one-tailed) 99-percent 10-day value-at-risk estimate that was calculated using a model that satisfied a list of prescribed qualitative and quantitative regulatory standards.[32] Trading book value-at-risk capital requirements were substantially lower than the Basel I credit risk capital requirements that would apply if a security were held in the bank's held-to-maturity banking book. Market risk capital requirements made it beneficial to hold mortgage risk in the form of securities held in the bank's trading book instead of as held-to-maturity whole mortgages or mortgage-backed securities in the institution's banking book.

In 2002, the basic Basle I framework was modified by the "Recourse Rule" Amendment. This amendment was supposed to modify a bank's minimum risk-based capital requirements so that the requirements would be "better" aligned with the risk generated by: (i) bank asset sales that included recourse agreements; (ii) bank issued direct credit substitute products like liquidity puts; and, (iii) the various subordinated tranches in asset securitizations. With this amendment, securitization tranches rated by NRSROs, especially highly rated tranches, were assigned favorable credit risk weights which lowered the amount of regulatory capital a bank needed to hold the instrument in its banking book.

Tranches with NRSRO ratings AA and above received a risk weight of 20 percent ($1.6 in capital per $100 investment); tranches rate A received a 50 percent risk weight ($4 in capital per $100 investment); tranches rated BBB received a 100 percent risk weight ($8 in capital per $100 investment); and tranches rated BB received a 200 percent risk weight ($16 in capital per $100 investment). Tranches with ratings lower than BB had to be deducted dollar-for-dollar from a bank's regulatory capital ($100 in capital per $100 investment) which equates to a risk weight of 1250 percent.[33] These changes to the regulatory capital requirements gave banks a strong incentive to securitize their mortgage loans and, should they want to hold residential mortgage exposure in their banking book, hold it in the form of MBS tranches

[31] Banking book assets are valued at amortized cost and are intended to be held to maturity. In held-to-maturity treatment, loans or securities are held at amortized cost and any diminution in a position's value that arises because of an increase in the probability of payment delays or default is recognized through loss provisions which impact bank earnings. Changes in position values that owe to changes in interest rates are not recognized.

[32] The regulation allowed a bank to approximate 10-day price changes using one-day price changes multiplied by the square root of 10.

[33] These rating grades refer to Standard and Poor's rating categories.

with NRSRO ratings of A or higher.

The Recourse Amendment also included preferential treatment for short-term money market type instruments that received the highest NRSRO ratings. Instruments rated A1-P1 were assigned a 20 percent risk weight. Instruments rated A2-P2 received a 50 percent weight, while instruments rated A3-P3 received a 100 percent risk weight.

Prior to the onset of the 2008 financial crisis, market price quotes for NRSRO highly-rated tranches of private label MBS showed very little day-to-day price volatility. If these securities were held in a bank's trading book, instead of its banking book, they were subject to capital requirements set by the market risk amendment. The value-at-risk models for subprime MBS securities typically modeled day-to-day price variation in terms of the day-to-day variation of several key interest rates from the Treasury yield curve. These models typically did not model the possibility that a security might experience an NRSRO ratings downgrade or default. For the most part, these models produced very small value-at-risk estimates. Moreover, institutional investors could hedge any un-modeled but unwanted credit risk using credit default swaps written on MBS securities which would also be marked-to-market in a bank's trading book value-at-risk calculations.

In the years prior to the 2008 financial crisis, I saw regulatory value-at-risk estimates for highly-rated subprime MBS securities as low as 15 to 20 basis points. Using a typical Market Risk Amendment back test multiplier of 3, a 20 basis point average value-at-risk estimate, along with a 1.6 percent specific risk charge[34] would produce an equivalent risk weight of 9.1 percent. [35] This compares to a risk weight of 50 percent should the bank have held residential mortgage risk in the form of whole mortgage loan, or 20 (50) percent for AA (A) NRSRO-rated MBS investment grade tranche of a mortgage-backed security if held in the institution's banking book.

For every $100 invested in the aforementioned hypothetical private label MBS held in the bank's trading book, the bank would have to hold regulatory capital equal to 8 percent of $9.10, or about $0.73. If the bank had a supervisory approved specific risk model that produced a specific risk capital charge of less than 1.6 percent, the capital savings from holding MBS securities in the trading book instead of whole mortgage loans or MBS securities in the banking book could be even larger. MBS trading book exposures held in the form of asset-backed commercial paper would have had even smaller regulatory capital

[34] 1.6 percent is the specific risk capital charge for a non-government security with a maturity of more than 2 years.
[35] The equivalent risk weight for the mortgage-backed security is 12.5*.006+1.6=9.1 percent.

requirements.

Other regulatory capital requirements that created bank incentives to invest in residential mortgage risk included preferential rules regarding investments in Fannie Mae, Freddie Mac and Ginnie Mae securities. The debt and MBS issued by these federal housing GSEs received a risk weight of 20 percent for banking book investments and banks were not subject to concentration restrictions as to their total GSE exposures.[36] Moreover, national banks could purchase and hold Freddie Mac and Fannie Mae preferred shares in their banking book and face only a 20 percent risk weight. State-chartered banks could also purchase shares but faced a higher risk weight of 100 percent. Many banks did hold substantial investments in Fannie Mae and Freddie Mac debt and preferred shares and suffered commensurate losses on these investments when these GSEs were placed into government conservatorship.[37] These losses contributed to the failure of many insured depository institutions.

2.4 Capital Market Financial Innovation

Shortcomings in bank minimum capital requirement regulations were not the only factor contributing to the imbalances that caused the 2008 global financial crisis. The Financial Crisis Inquiry Report argues (and I agree) that the housing bubble and subsequent financial crisis were also fueled by the development of a new set of wholesale capital markets instruments that were created to facilitate the structured debt securitization market.

Ironically, the activities of the Resolution Trust Corporation (RTC), the temporary government agency created by FIRREA to dispose of the assets of failing thrift institutions, were an important catalyst for the development of the market for structured securitized debt products.[38] The Resolution Trust Corporation institutionalized structured debt securitizations. These financially-engineered instruments added credit enhancements to a pool of below investment grade collateral to create senior-subordinated bond structures with a large share of highly-rated bonds. The RTC was a pioneer in issuing senior-subordinated "waterfall structures", overcollateralization, bank letter of credit guarantees, and insurance company guarantees (so-called "wraps") as mechanisms that enabled pools of low-quality assets to be securitized

[36] Bank regulations typically limited a bank's overall exposure to a single counterparty to some percentage of a bank's capital. For example, OCC rules at the time restricted a national banking from lending more than 15 percent of the bank's unimpaired capital and surplus for unsecured a single borrower. They could lend an additional 10 percent of their unimpaired capital and surplus to that borrower if the additional 10 percent was fully collateralized. These rules were waived for exposures to the federal housing GSEs.

[37] See, for example https://www.federalreserve.gov/pubs/ifdp/2012/1045/ifdp1045.pdf

[38] This opinion is shared by many. See, for example, The Financial Crisis Inquiry Report (FCIC), available at https://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf, pp. 69-71.

in special purpose financial entities that issued highly-rated bonds to fund a substantial share of their collateral pool.

The special financial entities involved in securitization transactions are called special purpose vehicles (SPVs) and special investment vehicles (SIVs). They are bankruptcy remote pass-through entities that purchase and hold loans or bonds and issue bonds called collateralized debt obligations (CDOs) to fund their investments. Like mutual funds, the CDO bonds issued by SPVs and SIVs are tax exempt entities provided that they distribute at least 95 percent of the income generated by the pool of assets that backs their securitizations.

CDO bonds issued SPVs and SIVs promise specific cash payments profiles funded from the gross revenues generated by their asset holdings and credit or liquidity guarantees. The gross interest payments from SPV(SIV) assets are pooled and divided among the classes of bonds issued by the SPV (SIV). The highest quality bond class issued by the SPV(SIV) gets the highest priority over the pooled interest receipts to satisfy the bond class promised interest payments. The second highest bond class issued by the SPV(SIV) has priority claim on the remaining pooled interest receipts to satisfy its class promised interest payments. The "waterfall" of claims on remaining gross interest receipts continues with further subordinated tranches.

As a general matter, SPVs issue bonds with effective maturities that mirror the maturity of the collateral pool while SIVs often fund long maturity collateral with short maturity securities like commercial paper.

By the time the RTC ceased operations at year-end 1995, the financial engineering techniques underlying senior-subordinated structures and credit enhancements were widely accepted by investors as a legitimate method of lowering the yields on the bonds issued to fund a pool of lesser quality securitized assets.

As the subprime mortgage-backed securitization market continued to develop using credit enhancement structures, the market needed to find buyers for the lower-quality tranches of MBS securities.[39] The market solved this problem by developing and expanding the issuance of subprime-backed CDOs to include bankruptcy remote SPVs that purchased, pooled, and securitized the subordinated tranches of subprime MBS issues.

[39] Early finance company who pioneered subprime mortgage securitizations in the late 1990s using pools of manufactured housing mortgages were forced into bankruptcy because, for lack of third-party buyers, they were forced to hold the subordinated tranches of their securitizations.

Low-rated subprime mortgage-backed bonds issued by SPVs and SIVs often were purchased by other SPVs and SIVs and used as the assets to back new so-called MBS re-securitizations. These re-securitizations were funded by issuing so-called CDO-squared securities which were bonds issued by an SPV that predominately purchased and held the securities issued by a CDO. CDO demand for subordinate tranches of subprime MBS securities indirectly supported orginations of subprime residential mortgages.[40]

Another financial innovation that fueled exposure to subprime mortgage default risk was the development of credit default swaps on single tranches of private label subprime MBS and synthetic CDO-squared securitizations. Banks, investment banks and insurance companies like American Insurance Group (AIG) were active participats in this credit risk transfer market.

Using credit default swaps referencing single tranches of private label subprime MBS, it was possible to either assume—or alternatively hedge—the credit risk on single tranches of private label subprime MBS. Banks and investment banks also assembled portfolios of credit default swaps on various private label single tranche subprime MBS securities and used them as the underlying collateral to create synthetic subprime CDO-squared securities. These derivative securities could be used to buy or sell the underlying default risk in subprime MBS and CDO-squared securities without the SPV owning the referenced subprime securities.

The securities issued by SIVs that purchased MBS were a specific class of asset-backed commercial paper. MBS SIV funded their assets with short maturity instruments. Under normal market conditions short-term interest rates are typically lower than longer maturity rates. SIVs' bonds appeared to be especially profitable so long as the term-structure of interest rates was upward sloping and SIVs' short-term commercial paper funding could continue to be rolled over at favorable rates.

Money market mutual funds were an important purchaser of asset-backed commercial paper backed by pools of subprime mortgage and MBS. At that time, money market mutual funds were required to invest 95 percent of their assets in investment grade commercial paper. Non-bank subprime mortgage originators and CDOs were large issuers of subprime mortgage asset-back commercial paper. In order to receive an investment grade rating, NRSROs required many asset-backed commercial paper issuers to have liquidity puts or letters of credit from banks. Banks sold credit guarantees to the SPVs and SIVs that purchased subprime mortgages and subprime MBS securities to facilitate their re-securitizations. These credit guarantees were direct credit substitutes eligible to receive favorable regulatory capital treatment

[40] FCIC, p. 134.

under the Basel I "Recourse Rule" amendment.

Non-bank subprime mortgage originators and commercial paper issuers also had large warehouse lines of credit with banks, sometimes in the form of repurchase agreements using subprime mortgages as collateral,[41] to fund their mortgage origination operations.[42]

As long as subprime MBS security pools experienced low default rates, banks profited from selling liquidity puts and letters of credit to asset-backed commercial paper programs backed by subprime mortgage collateral. Under the Recourse Rule amendment, these credit substitutes received preferential regulatory capital treatment.[43] However, this business became costly once banks had to provide these commercial paper programs with liquidity support when the market for asset-backed commercial paper collapsed in the fall of 2007.[44]

2.5 Unscrupulous NRSROs

The profitability of securitization and re-securitization programs depended on the share of the asset pool that could be funded by bonds that received high NRSRO ratings. NRSROs competed to rate the securities being sold to fund the subprime mortgage businesses. The NRSRO industry was highly profitable and very concentrated. S&P and Moody's accounted for over three-quarters of all assigned ratings. NRSROs were essentially unregulated and effectively shielded from any liability for producing inaccurate ratings.

NRSROs were exempted from any liability associated with their ratings under the so-called "negligence standard of care." Normally an expert's opinion could be published in a SEC registration statement only if: (i) the expert gives consent; and (ii) the expert is liable to investors for negligent and misleading opinions. In the case of NRSRO ratings, Rule 436 of the Securities Act explicitly states that NRSRO ratings included in a prospectus are not to be deemed part of the Section 7 or 11 of security registration statements.[45] Consequently, MBS CDO issuers did not have to get consent to disclose NRSRO ratings in bond prospectus and NRSROs were not liable for negligent or misleading opinions.

The profitability of MBS securitizations depends on acquiring a favorable NRSRO ratings on the largest

[41] The Financial Crisis Inquiry Report (FCIC), available at https://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf, p. 142.
[42] The Financial Crisis Inquiry Report (FCIC), available at https://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf, p. 113.
[43] The Financial Crisis Inquiry Report (FCIC), available at https://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf, p. 113-114.
[44] Covitz, Liang and Suarez (2009), "The Evolution of a Financial Crisis: Panic in the Asset-Backed Commercial Paper Market," Federal Reserve Board, https://www.federalreserve.gov/pubs/feds/2009/200936/200936pap.pdf
[45] https://www.law.cornell.edu/cfr/text/17/230.436

possible share of the asset pool's value backing the MBS. The larger the share of financing that could be raised from selling highly-rated securitization bond tranches, the greater the remaining cash flow and higher potential yield that could be earned on the subordinate tranches, making them easier to place or re-securitize in mortgage-backed CDOs.

NRSROs actively competed for market share in rating subprime MBS and CDOs. As Moody's managing director, Jerome Fons explained in Congressional testimony,[46] "My view is that a large part of the blame can be placed on the inherent conflicts of interest found in the issuer-pays business model and rating shopping by issuers of structured securities. An NRSRO's market share depended on its willingness to participate in this shopping spree.

NRSROs only were paid for the MBS and CDO securitization they rated, and as the housing price bubble grew, rating MBS securitization deals became a very important source of NRSRO business.[47] It was also relatively easy for the securitizing banks and investment banks to play the NRSROs against one another because MBS CDO structures were opaque and paid high fees to the winning NRSRO. Originators of structured securities typically chose the agency with the lowest standards, fueling a race to the bottom in terms of NRSRO rating quality.[48]

NRSROs did not sample or otherwise review the loans in the securitization asset pools they rated.[49] They increased the share of the asset pool funded by highly rated MBS tranches by employing optimistic modeling assumptions to rate structured MBS products. These included calibrating mortgage default assumptions using a historical period with rising home prices and very low subprime mortgage default rates. They also employed very optimistic correlation assumptions even though many asset pools

[46] Testimony of Jerome S. Fons Before the Committee on Oversight and Government Reform United States House of Representatives October 22, 2008, https://oversight.house.gov/sites/democrats.oversight.house.gov/files/documents/20081022102726.pdf [Fons' reference to (Fons 2008) in the quote is: "Rating Competition and Structured Finance, *Journal of Structured Finance*, Fall 2008.]

[47] For example, the FCIC reports (p. 118) that mortgage-backed securitization ratings made up close to half of Moody's rating revenues between 2005 and 2007.

[48] Fons went on to say, "Following the 2000 "spin" from Dunn & Bradstreet, in which Moody's became a standalone public company, management's focus increasingly turned to maximizing revenues. Stock options and other incentives raised the possibility of large payoffs. Managers who were considered good businessmen and women—not necessarily the best rose analysts—rose through the ranks. Ultimately, this focus on the bottom line contributed to an atmosphere in which the aforementioned rating shopping could flourish."

[49] FCIC, p. 120.

contained mortgages with geographic concentrations.[50] Even as housing prices rose to unprecedented levels, NRSROs never adjusted their modeling assumptions to put greater weight on the possibility of widespread home price declines.[51]

2.6 Regulatory Experts Failed to Recognize the Risk

The boom in subprime originations, securitizations and re-securitizations did not go unnoticed by financial regulators and their economist experts. In the boom that occurred before the crash, new financial innovations become widely adopted among financial institutions and appeared to be generating sustainable profits. In such circumstances, economists have an inherent tendency to attribute the financial trend as the outcome of some rational process. This tendency reflects the profession's predilection to model economic phenomenon implicitly or explicitly presuming that firms and investors have rational expectations. The subprime mortgage frenzy generated substantial financial institution profits in the years before subprime mortgages began to default with vigor, and true to nature, regulators' economic experts viewed so-called "originate to distribute" subprime mortgage market innovations as generally positive developments.

In a 2004 report[52] on Credit Risk Transfer, the Joint Forum, a Committee comprised of the Basel Committee on Banking Supervision, the International Organization of Securities Commissions, and the International Association of Insurance Supervisors found, "Market participants generally hold highly favorable views regarding the overall benefits of a robust [Credit Risk Transfer] CRT market."[53] The report cites CRT benefits that include the ability to transfer risks and reduce risk concentrations. They also cite the benefits of CRT activity in fostering more liquid and transparent markets for credit risk generally.

The 2006 Financial Stability Report of the International Monetary Fund stated, "There is growing recognition that the dispersion of credit risk by banks to a broader and more diverse group of investors, rather than warehousing such risk on their balance sheets, has helped to make the banking and overall financial system more resilient.[54] The report argues that CRT brought new investors into credit markets

[50] NRSROs assumed the individual mortgages in MBS securities were unlikely to default simultaneously even though many of the loans in the pool were in the same geographic regions of the countries. In CDO deals NRSROs assumed that the performance of the MBS securities in the CDO pool were not strongly correlated.
[51] FCIC p. 121.
[52] Joint Forum (October 2004), "Credit Risk Transfer, https://www.bis.org/publ/joint10.pdf
[53] CRT is an abbreviation for Credit Risk Transfer which includes structured securitization products like subprime MBS.
[54] International Monetary Fund, The Influence of Credit Derivative and Structured Credit Markets on Financial Stability, in Global Financial Stability Report A Report by the International Capital Markets Department on Market Developments and Issues 51, 63 (April 2006).

with differing risk management and investment objectives (including other banks seeking portfolio diversification) which will help to mitigate and absorb shocks to the financial system. The improved resilience will result in fewer bank failures and a more stable supply of credit. The report concludes that CRT makes, "commercial banks, a core segment of the financial system, … less vulnerable today to credit or economic shocks."

The conclusions of the IMF's financial stability report were echoed in the remarks made by Federal Reserve Bank of New York president Tim Geithners at the Global Association of Risk Professionals annual conference in 2006. According to Geithner, "the rapid growth in instruments for risk transfer and risk management… provide substantial benefits to the financial system. Financial institutions are able to measure and manage risk much more effectively. Risks are spread more widely, across a more diverse group of financial intermediaries, within and across countries. These changes have contributed to a substantial improvement in the financial strength of the core financial intermediaries and in the overall flexibility and resilience of the financial system in the United States. And these improvements in the stability of the system and efficiency of the process of financial intermediation have probably contributed to the acceleration in productivity growth in the United States and in the increased stability in growth outcomes experienced over the past two decades."

In 2008, economists from the Federal Reserve Bank of Boston and the FDIC presented a joint paper[55] at the Federal Reserve Bank of Chicago Bank Structure Conference (the premier Federal Reserve System bank research conference at the time) that argued, "banks use mortgage securitization to reduce insolvency risk and increase leverage. We also find that securitization techniques increase bank profitability."

In yet another example, a 2007 paper written by a Federal Reserve Board economist argued that the huge growth in the credit derivative and securitization market could be attributed to improvements in financial institution risk management. "Credit Derivative and Risk Management," which appeared in the Federal Reserve Bank of Atlanta Economic Review[56] concluded, "Given the rapid growth of the credit derivatives market, it may be fortunate that one of the most widely used complex credit derivative structures, the CDO tranche, is a mature product has already been through a stressful credit cycle. This experience should

[55] Jiangli, W. and M. Pritsker (2008), "The Impact of Securitization on U.S. Bank Holding Companies. No. 1097, Proceedings, The Federal Reserve Bank of Chicago https://econpapers.repec.org/paper/fipfedhpr/1097.htm
[56] https://www.atlantafed.org/-/media/documents/research/publications/economic-review/2007/vol92no4_gibson.pdf

contribute to financial stability during the next credit cycle, whenever that may come to pass."

Of course, in time, all these expert assessments of the benefits of the credit risk transfer associated with subprime mortgage originations and securitizations proved to be wrong. Subprime mortgage securitizations and related credit derivative market innovations created unsustainable credit risk concentrations and financial leverage in many financial institutions, including in "too-big-to-fail" federal housing GSEs, banks, bank holding companies, insurance companies and investment banks.

In a three-year period, from 2007 to 2009, subprime mortgage defaults led to a severe recession and the failure of over 150 insured depository institutions, stock market losses of nearly $8 trillion, the failure of several large investment banks, large losses at the FHA, the federal housing GSEs and insurance companies like AIG—all of which required federal government support.[57]

In response to the financial crisis, the U.S. government took extensive action to restore confidence in the financial markets. In October of 2008, Congress passed the Emergency Economic Stabilization Act ("EESA") to provide assistance to the financial system.[58] Subsequently, in June of 2009, President Obama announced "a sweeping overhaul of the financial regulatory system" to increase oversight of the financial system, which culminated with the passing of the Dodd-Frank Act.[59]

The Dodd-Frank Act was enacted on July 21, 2010. The Dodd-Frank Act instituted broad modifications to the supervision of financial institutions related to banking, securitization markets, consumer protection, executive compensation, and corporate governance.[60]

3. The Dodd-Frank Act

My discussion of the Dodd-Frank Act is focused on the provisions most closely related to the aforementioned supervision and regulation shortcomings that led to the Great Financial Crisis.

Among the many provisions of The Dodd-Frank Act was the creation of five new federal regulatory entities that were in large part created to prevent a reoccurrence of the most consequential financial excesses that caused the Great Financial Crisis. These entities are: The Consumer Financial Protection Bureau (CFPB), The Office of Financial Research (OFR), the Financial Stability Oversight Council (FSOC),

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[57] *See* FDIC, "Failed Bank list," available at https://www.fdic.gov/bank/individual/failed/banklist html.
[58] *See* "Emergency Economic Stabilization Act of 2008," Public Law 110–343, October 3, 2008, at 3765.
[59] *See* "Remarks of the President on Regulatory Reform," *Obama White House Archives*, June 17, 2009, available at https://obamawhitehouse.archives.gov/the-press-office/remarks-president-regulatory-reform/.
[60] *See* Davis Polk & Wardell LLP, "Summary of the Dodd-Frank Wall Street Reform and Consumer Protection Act, Enacted into Law on July 21, 2010," July 21, 2010, p. i. *See also* Morrison & Foerster, "The Dodd-Frank Act: A Cheat Sheet," 2010, p. 3.

the Federal Insurance Office (FIO), and the Office of Credit Ratings within the Securities and Exchange Commission.

The CFPB was created to protect consumers from unfair, deceptive and abusive practices. Among its duties are the promulgation of regulations that protect consumers from predatory mortgage origination practices, including ensuring they had the ability to repay their mortgages, and to enforce laws that prohibit discrimination in the provision of financial services.

The OFR was established to support the work of the FSOC by collecting and standardizing data. It is charged with providing research services to support the FSOC including developing tools that can be used to assess and monitor financial stability.

Insurance companies like AIG played an important role in the Great Financial Crisis by engaging in credit risk transfer activities that supported risky subprime MBS issuance. The FIO was created to assist the FSOC in identifying systemically risky insurers and insurance practices by collecting and analyzing information. It was also designated as the U.S. representative in international fora regarding insurance regulations.

The FSOC was created to identify institutions or activities that may have the potential to create systemic risk for the financial sector. It was also designed to coordinate information and regulatory activities among the Secretary of the Treasury (the FSOC chair) and its federal agency voting members: the Federal Reserve Board, the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corporation (FDIC), the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC), the Federal Housing Finance Agency (FHFA), the National Credit Union Administration (NCUA), and the Consumer Financial Protection Bureau (CFPB). The head of the OFR and the FIO do not have direct regulatory authority and are non-voting FSOC members.

Among the FSOC's duties is the power to investigate and designate non-bank financial institutions as "systemically important" and require them to comply with enhanced regulation and oversight by the Federal Reserve Board. If it identifies financial activities or practices that raise systemic risk concerns, it has the power to recommend that the primary financial regulatory agency or agencies apply new or heightened standards and safeguards.

Poorly designed minimum regulatory capital requirements that allowed the use of in inaccurate NRSRO ratings and permitted excessive leverage were an important underlying cause of the Great Financial Crisis. The Dodd-Frank Act includes many provisions that mandate enhanced regulatory capital

requirements for large complex bank and financial holding companies and their insured depository subsidiaries.

For example, Title I Section 115 of the Act requires the Federal Reserve Board to consider imposing enhanced regulatory standards recommended by the FSOC for non-bank financial institutions that the FSOC has designated to be systemically important. The enhanced standards the FSOC may recommend include: "(A) risk-based capital requirements; (B) leverage limits; (C) liquidity requirements; (D) resolution plan and credit exposure report requirements; (E) concentration limits; (F) a contingent capital requirement; (G) enhanced public disclosures; (H) short-term debt limits; and (I) overall risk management requirements."

Section 121 of the Act gives the Federal Reserve Board prompt corrective action powers over the bank holding companies and non-bank financial institutions it supervises should the Federal Reserve Board, by a 2/3 margin vote, find that the institution "poses a grave threat to the financial stability of the United States." The Federal Reserve Board's powers are extensive and include the power to force the institution to sell or otherwise transfer assets, businesses or entities to nonaffiliated parties.

Section 165 requires the Board of Governors to impose enhanced regulatory requirements on the large complex bank holding companies it supervises. Enhanced regulations may encompass regulations of the type permitted under Section 115. The section also requires periodic Federal Reserve Board designed stress tests as well as periodic company-run stress test requirements.

Title I, Section 171 the Dodd-Frank Act requires regulators to establish both minimum leverage and minimum risk-based capital requirements and to impose enhanced capital requirements on institutions deemed to be systemically important and supervised by the Federal Reserve Board.

Title I also requires certain nonbank financial institutions and bank holding companies to periodically prepare and file resolution plans or so-called living wills with the Federal Reserve Board and the FDIC. These resolution plans include public and confidential sections, the latter of which have restricted access even within the FDIC and Federal Reserve Board.

The financial crisis was triggered by the failure of several large complex financial institutions in September 2008. These failures brought a halt to normal financial intermediation transactions until the federal government took extraordinary measures to rekindle investor confidence. Dodd-Frank resolution plans are intended to reduce the financial spillover risk created by the insolvency of large complex bank and financial holding companies. Resolution plans are intended to provide regulators with possible

strategies "for rapid and orderly resolution in the event of material financial distress or failure" under the bankruptcy code. Dodd-Frank Act Title II, Orderly Liquidation Authority, was created to help regulatory authorities maintain financial stability by resolving the failure of a large complex financial institution in a process using FDIC receivership powers when authorities have determined that its failure under a bankruptcy code proceeding would be highly destabilizing.

Under subsequent revisions to the Dodd-Frank Act, the largest most complex institutions, those deemed to be systemically important, must file living wills annually. Other large and complex financial intuitions, both foreign and domestic, must file a living wills every three years. The FDIC and Federal Reserve Board jointly review the credibility of institutions' living will submissions and must approve them.[61] Institutions can face penalties if their submission is not deemed to be credible.

Title II of the Dodd-Frank Act assigns the FDIC a new receivership role. In addition to the FDIC's duty to act as the receiver of failed insured depository institutions, Orderly Liquidation Authority (OLA) broadens the FDIC's powers by allowing it to function as the receiver for bank holding companies, financial holding companies and other financial firms should government authorities determine that the nonbank financial firm in question is in danger of failing and its failure and resolution under the bankruptcy code would have negative systemic consequences and create larger losses throughout the financial system.

Use of the OLA powers require a formal Systemic Risk Determination made by the Secretary of the Treasury in consultation with the President and financial regulatory authorities. A Systemic Risk Determination requires:

- The approval of the Secretary of the Treasury in consultation with the President
- A vote in favor of at least 2/3 members of the Federal Reserve Board, and
- A vote in favor from the primary federal regulator of the largest regulated financial subsidiary
    - The FDIC if an insured depository (at least 2/3 board approval)
    - The SEC if a broker-dealer (at least 2/3 board approval)
    - The FIO if an insurance company

Under the Dodd-Frank Act, the resolution under the OLA must not impose any losses on taxpayers.[62] The Dodd-Frank Act established an Orderly Liquidation Fund ("OLF") which is an FDIC line of credit with the U.S. Treasury that the FDIC may draw upon, subject to terms set by Treasury, to lend to the non-

[61] *See* FDIC Office of Inspector General, "The FDIC's Resolution Plan Review Process, available at https://www fdicoig.gov/publications/fdics-resolution-plan-review-process.
[62] *See* Dodd-Frank Act, at 1518.

bank financial institution's receivership."[63] The OLF is separate from the Deposit Insurance Fund. It is not prefunded, but instead relies the proceeds of asset sales in the OLA resolution and on special assessments on large highly complex institutions (that have not failed) to repay any OLF borrowings.[64] OLF special assessments are in addition to deposit insurance fund members' premium assessments.

Given the importance of asset securitization and the role inaccurate and conflicted NRSRO ratings played in creating the Great Financial Crisis, Section 932 of the Act gave the SEC increased regulatory powers over the NRSROs. It established the Office of Credit Ratings (OCR) within the SEC and assigned it regulatory responsibility to ensure NRSROs ratings were based on process approved (and attested to) by the NRSRO's board of directors.

The OCR is required to conduct annual audits of all NRSROs and guard against NRSRO conflicts of interest among internal sales and rating processes, and ensure the NRSROs were operating in an ethical manner. To improve transparency, NRSROs are required to publicly disclose key features of their ratings methodology. The Act also made it easier to sue NRSROs for malfeasance and empowers the Office of Credit Ratings to impose penalties for regulatory violations including repealing an NRSROs designation.

Importantly, Section 939 required financial regulatory agencies to remove all references to NRSROs ratings in their financial regulations such as bank minimum regulatory capital requirements. To create incentives to improve ratings accuracy, the OCR has used its rule making authority to facilitate the issuance of unsolicited ratings.

Section 941 of the Act requires that agents creating and selling asset backed securities retain an economic interest in the credit risk the securitization transfers to third parties to ensure that the securitization originator has "skin in the game", i.e., bears credit losses should its ABS issue subsequently perform poorly. The Act prohibits "a securitizer from directly or indirectly hedging or otherwise transferring the credit risk that the securitizer is required to retain."

[63] The Department of the Treasury, "Report to the President of the United States, Orderly Liquidation Authority and Bankruptcy Reform," February 21, 2018, p. 1.

[64] FDIC may impose a special assessment on certain large financial institutions with at least $50 billion in assets. The OLA has never been triggered, and thus there has never been a need for the Treasury to fund the OLF to provide financial support to a failed financial institution.

4. Has the Dodd-Frank Act Worked?

Measured by the goals articulated in its own preamble, the Frank-Act is a failure:

> An Act: To promote the financial stability of the United States by improving accountability and transparency in the financial system, to end ‘‘too big to fail’’, to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes.

Notwithstanding the many complex and intrusive provisions of the Act, the system experienced a systemic banking crisis in March 2023 that required a costly government-engineered bailout of the banking system when several “too-big-fail” banks failed. The underlying cause of these failures should have been proactively detected and remediated by the FSOC and federal banking regulators using the extensive prompt corrective action powers granted by the Act and prior legislation.

The crisis required $25 billion in a Treasury first loss backstop for potential losses the Federal Reserve might incur in providing an emergency lending facility that was needed to bailout the banking system. The so-called Bank Term Funding Program liquefied banks by loaning them par value on pledged collateral from their held-to-maturity investments even those with large market-value discounts as a consequence of increased interest rates.

The decision to fully bailout very large sophisticated uninsured depositors at failing banks and assign the resulting losses to the DIF, and ultimately to large banks through special DIF assessments is not an example of the “improved accountability” the Dodd-Frank Act promised to deliver. The decision to insure all deposits regardless of deposit size generated very large DIF losses compared to the DIF losses that would have been generated if the failing banks had been resolved using standard least-cost FDIC receivership rules. The federal banking regulators who failed in their oversight responsibility assigned the very large cost of the resulting DIF receiverships to large banks that had no responsibility for the problems at the banks that failed.

Because of issues discussed below, the failures had to be funded by Fed discount window loans. This unorthodox and opaque method of receivership funding increased the losses to the DIF, additional losses that were also imposed on large banks through special DIF assessments. The reasons behind the use of Fed discount window funding for these receiverships highlights important shortcomings in the FDI Act (as currently amended) and Title II of the Dodd-Frank Act, shortcomings that, to the best of my knowledge have not received the attention they merit given the issues and costs they could create in

future financial crisis.

When assessing the positives and negatives of the Dodd-Frank Act, the words Charles Ponzi seem apropos, "When a man's vision is fixed on one thing, he may as well be blind."[65] While the Dodd-Frank Act has failed to live up to its stated purpose, the performance of the financial system under the Dodd-Frank Act is not solely attributable to provisions of the Dodd-Frank Act.

The last 15 years have seen monumental changes in the manner in which the Federal Reserve conducts monetary policy. The Fed not only engineered extended periods of near zero interest rates, it engaged in several massive QE purchase programs that vastly expanded its balance sheet while paying interest on the vastly expanded bank reserve balances created by its QE purchases. In exercising monetary policy, the Fed was very slow to identify and react to a large and persistent bout of inflation, including a boom in housing prices. Moreover, over this period, the federal government has consistently run large budget deficits. Funding for these deficits has greatly expanded the volume of outstanding US Treasury securities with implications for the investments of financial sector institutions and the liquidity demands in Treasury markets.

4.1 Impact of the Dodd-Frank Act on Financial Sector Intermediation

The changes in federal supervision and regulation of financial institutions mandated in the Dodd-Frank Act have the potential to significantly alter the way in which the economy accesses financial intermediation services. Table 1 shows the shares of the economy's total loan borrowing liabilities held as assets by various categories of domestic financial institutions from 2015Q1 quarter-end through quarter-end 2025Q1. The data show that, over time, as the regulations required by Dodd-Frank became fully phased-in, the share of loans provided by the domestic banking sector and the government sponsored enterprises declined by about 1 percent, while loans held by credit unions, GSE guaranteed MBS and the catch-all "other lender" category—a category that includes private funds (included in the Flow of Funds nonprofit and household sector) and nonfinancial lenders—each increased more than 1 percent. The largest loss of market share of loan held, 1.7 percent, was posted by ABS issuers.

Table 2 shows the shares of the economy's total debt securities liabilities that have been issued as well as the share of these securities held as assets by various categories of domestic financial institutions from 2015Q1 quarter-end through quarter-end 2025Q1. The data show a decline in debt security shares owned by long-maturity debt mutual funds that has been more than offset by an increase in the debt

[65] As quoted in Kindleberger (1978), Manias, Panics, and Crashes. New York: Basic Books, Inc, p. 39.

security shares owned by money market mutual funds. The shift between long-maturity and money market mutual funds coincides with the increase in short-term interest rates that began in 2022 suggesting that this sizable shift is more related to Federal Reserve policy that it is to Dodd-Frank regulations. Declines in the market shares of Life Insurance Companies, Government Sponsored Enterprises, and Real Estate Investment Trusts were offset by increases in Exchange-Traded Funds and the catch-all "Other Lender" category, Other Lenders includes private funds and nonfinancial sector lenders. The share of ABS issuers declined over this period but the share was not large enough to justify showing it as a separate lender category. The market shares of debt securities owned by depository institutions and broker-dealers fluctuated over this period, but do not show any obvious trend. This suggests that these types of financial intermediaries, at least at the aggregate industry and total debt outstanding level, did not substantially change their investment share as Dodd-Frank regulations were phased in. However, individual institutions could have and did change the type of debt securities they purchased.

Table 1: Financial Institution Share of Total Domestic Loans Liabilities Financed

Beginning Date of Quarter	All Sector Total Loan Liabilities; $Millions, NSA	U.S.-Chartered Depository Institution Loan Assets, NSA	Credit Union Loan Assets, NSA	Government-Sponsored Enterprise Loan Assets, NSA	Agency-and GSE-Backed Mortgage Pools Total Mortgage Assets, NSA	Issuers of Asset-Backed Securities Loan Assets, NSA	Life Insurance Company Loan Assets, NSA	Finance Company Loan Assets, NSA	Other Lender Loan Assets, NSA
1/1/2015	25,075,689	30.7%	2.9%	22.0%	6.6%	5.0%	2.3%	4.9%	25.6%
4/1/2015	25,293,021	31.1%	3.0%	22.1%	6.6%	5.0%	2.3%	4.9%	25.1%
7/1/2015	25,435,629	31.3%	3.1%	22.1%	6.8%	4.8%	2.3%	4.9%	24.8%
10/1/2015	25,802,442	31.6%	3.1%	22.0%	6.9%	4.6%	2.4%	4.4%	25.1%
1/1/2016	25,993,484	31.7%	3.1%	21.8%	6.9%	4.5%	2.4%	4.2%	25.4%
4/1/2016	26,318,660	32.0%	3.2%	21.8%	7.0%	4.3%	2.4%	4.1%	25.2%
7/1/2016	26,585,808	32.1%	3.2%	21.7%	7.1%	4.1%	2.4%	4.1%	25.3%
10/1/2016	26,827,784	32.2%	3.3%	21.8%	7.2%	3.9%	2.4%	4.0%	25.1%
1/1/2017	26,972,926	32.0%	3.3%	21.7%	7.3%	3.8%	2.4%	3.9%	25.5%
4/1/2017	27,263,524	32.2%	3.4%	21.7%	7.4%	3.7%	2.5%	3.9%	25.2%
7/1/2017	27,620,083	32.0%	3.4%	21.7%	7.5%	3.6%	2.5%	3.8%	25.4%
10/1/2017	28,089,750	32.0%	3.5%	21.5%	7.6%	3.5%	2.5%	3.7%	25.7%
1/1/2018	28,196,110	32.0%	3.5%	21.4%	7.7%	3.5%	2.5%	3.7%	25.8%
4/1/2018	28,796,758	31.8%	3.5%	21.2%	7.6%	3.4%	2.5%	3.6%	26.3%
7/1/2018	29,088,243	31.7%	3.6%	21.1%	7.7%	3.4%	2.5%	3.6%	26.4%
10/1/2018	29,571,285	31.9%	3.6%	21.0%	7.8%	3.3%	2.5%	3.5%	26.4%
1/1/2019	29,597,631	31.8%	3.6%	20.8%	7.8%	3.3%	2.6%	3.5%	26.5%
4/1/2019	29,847,279	32.1%	3.6%	20.8%	7.8%	3.3%	2.6%	3.5%	26.2%
7/1/2019	30,323,354	31.9%	3.6%	20.6%	7.8%	3.3%	2.6%	3.5%	26.6%
10/1/2019	30,693,543	31.9%	3.7%	20.5%	7.8%	3.3%	2.6%	3.4%	26.7%
1/1/2020	31,981,840	31.9%	3.6%	20.3%	7.6%	3.3%	2.5%	3.3%	27.4%
4/1/2020	31,973,601	32.1%	3.6%	20.0%	7.6%	3.3%	2.6%	3.2%	27.6%
7/1/2020	32,121,431	31.6%	3.7%	20.3%	7.6%	3.3%	2.5%	3.2%	27.9%
10/1/2020	32,556,094	31.0%	3.6%	20.6%	7.5%	3.2%	2.5%	3.2%	28.4%
1/1/2021	32,858,074	30.5%	3.6%	21.0%	7.4%	3.2%	2.5%	3.2%	28.6%
4/1/2021	33,877,873	29.7%	3.6%	20.9%	7.3%	3.1%	2.5%	4.8%	28.2%
7/1/2021	34,380,091	29.4%	3.6%	21.0%	7.2%	3.2%	2.5%	4.7%	28.3%
10/1/2021	35,376,785	29.5%	3.6%	21.0%	7.1%	3.3%	2.5%	4.4%	28.6%
1/1/2022	36,182,010	29.1%	3.7%	21.2%	7.0%	3.3%	2.5%	4.3%	28.9%
4/1/2022	37,025,175	29.6%	3.8%	21.3%	7.0%	3.3%	2.5%	4.3%	28.3%
7/1/2022	37,647,501	29.8%	3.9%	21.5%	7.0%	3.3%	2.5%	4.2%	27.8%
10/1/2022	38,179,289	30.0%	4.0%	21.8%	7.0%	3.2%	2.5%	4.2%	27.3%
1/1/2023	38,465,721	29.9%	4.0%	22.2%	7.1%	3.2%	2.5%	4.2%	26.9%
4/1/2023	38,485,557	30.1%	4.1%	21.8%	7.2%	3.2%	2.5%	4.3%	26.7%
7/1/2023	38,612,631	30.1%	4.2%	21.8%	7.3%	3.2%	2.6%	4.4%	26.5%
10/1/2023	39,060,640	30.0%	4.2%	21.5%	7.3%	3.2%	2.6%	4.4%	26.8%
1/1/2024	39,125,070	29.9%	4.1%	21.4%	7.4%	3.2%	2.6%	4.4%	26.9%
4/1/2024	39,489,912	30.0%	4.1%	21.3%	7.5%	3.2%	2.6%	4.4%	26.8%
7/1/2024	39,883,623	29.8%	4.1%	21.2%	7.5%	3.2%	2.7%	4.4%	27.1%
10/1/2024	40,223,558	29.9%	4.1%	21.1%	7.6%	3.3%	2.7%	4.4%	26.9%
1/1/2025	40,382,342	29.9%	4.1%	21.0%	7.6%	3.3%	2.7%	4.3%	27.1%

Source: Federal Reserve Board Flow of Funds data and authors calculations.

Table 2: Financial Institution Share of Total Domestic Debt Liabilities Financed

Beginning Date of Quarter	All Sectors Total Debt Security Liabilities, Millions of Dollars, NSA	Monetary Authority Debt Security Assets, NSA	U.S.-Chartered Depository Institution Debt Security Assets, NSA	Mutual Fund Debt Security Assets (Market Value), NSA	Money Market Fund Debt Security Assets, NSA	Security Brokers and Dealer Debt Security Assets, NSA	Property-Casualty Insurance Company Debt Security Assets, NSA	Life Insurance Company Debt Security Assets, NSA	Government-Sponsored Enterprise Debt Security Assets, NSA	Exchange-Traded Fund Debt Security Assets, NSA	Private Pension Fund Debt Security Assets, NSA	Real Estate Investment Trust Debt Security Assets, NSA	Other Lenders' Holdings of Debt Security Assets, NSA
1/1/2015	36,778,363	12.6%	8.9%	10.3%	4.5%	1.5%	2.8%	9.0%	1.3%	0.9%	3.3%	1.0%	43.8%
4/1/2015	37,087,627	12.2%	8.8%	10.2%	4.4%	1.4%	2.8%	8.9%	1.3%	0.8%	3.2%	0.9%	45.0%
7/1/2015	37,284,348	12.3%	8.9%	10.1%	4.4%	1.4%	2.8%	8.9%	1.2%	0.9%	3.2%	0.8%	45.1%
10/1/2015	37,503,305	12.1%	9.0%	9.9%	4.7%	1.3%	2.7%	8.8%	1.2%	0.9%	3.1%	0.8%	45.4%
1/1/2016	38,006,860	12.2%	9.0%	10.1%	4.9%	1.4%	2.8%	9.1%	1.2%	1.0%	3.2%	0.8%	44.3%
4/1/2016	38,237,402	12.3%	9.1%	10.4%	4.6%	1.4%	2.9%	9.4%	1.2%	1.0%	3.3%	0.8%	43.6%
7/1/2016	38,573,853	12.1%	9.3%	10.6%	4.5%	1.4%	2.9%	9.5%	1.2%	1.1%	3.3%	0.8%	43.4%
10/1/2016	38,767,823	11.5%	9.4%	10.2%	4.8%	1.3%	2.7%	9.1%	1.2%	1.1%	3.2%	0.8%	44.8%
1/1/2017	39,066,040	11.5%	9.4%	10.4%	4.6%	1.4%	2.7%	9.1%	1.1%	1.2%	3.3%	0.7%	44.6%
4/1/2017	39,427,909	11.4%	9.3%	10.7%	4.2%	1.4%	2.7%	9.2%	1.1%	1.3%	3.3%	0.7%	44.7%
7/1/2017	39,920,078	11.3%	9.3%	10.9%	4.4%	1.3%	2.7%	9.2%	1.0%	1.3%	3.4%	0.7%	44.5%
10/1/2017	40,504,280	11.0%	9.2%	11.0%	4.5%	1.3%	2.7%	9.1%	1.0%	1.3%	3.4%	0.7%	44.7%
1/1/2018	41,131,589	10.5%	9.0%	10.9%	4.8%	1.2%	2.6%	8.9%	1.0%	1.3%	3.3%	0.6%	45.7%
4/1/2018	41,219,076	10.3%	8.9%	11.0%	4.5%	1.3%	2.6%	8.7%	1.0%	1.4%	3.3%	0.6%	46.2%
7/1/2018	41,673,332	9.8%	8.8%	11.0%	4.5%	1.3%	2.6%	8.7%	1.0%	1.4%	3.3%	0.6%	47.0%
10/1/2018	42,108,877	9.5%	9.0%	10.5%	4.8%	1.6%	2.7%	8.6%	1.0%	1.5%	3.4%	0.6%	46.9%
1/1/2019	42,667,800	9.3%	9.1%	10.7%	5.1%	1.5%	2.7%	8.9%	1.0%	1.6%	3.4%	0.6%	46.0%
4/1/2019	43,052,728	9.1%	9.2%	11.1%	4.8%	1.6%	2.7%	9.2%	1.0%	1.7%	3.5%	0.7%	45.4%
7/1/2019	43,719,144	8.9%	9.4%	11.4%	5.3%	1.5%	2.7%	9.4%	1.1%	1.8%	3.6%	0.7%	44.3%
10/1/2019	44,205,179	9.1%	9.3%	11.5%	5.5%	1.5%	2.7%	9.4%	1.1%	1.8%	3.5%	0.7%	43.9%
1/1/2020	45,261,385	11.8%	9.5%	10.4%	6.4%	1.6%	2.6%	9.0%	1.1%	1.8%	3.5%	0.6%	41.7%
4/1/2020	48,630,196	14.1%	9.5%	10.4%	8.1%	1.5%	2.6%	9.0%	1.1%	1.9%	3.4%	0.6%	37.8%
7/1/2020	49,310,946	14.5%	10.0%	10.8%	7.4%	1.4%	2.6%	9.0%	1.1%	2.0%	3.4%	0.7%	37.0%
10/1/2020	50,404,939	14.7%	10.3%	11.0%	7.0%	1.3%	2.5%	9.0%	1.0%	2.1%	3.4%	0.7%	36.9%
1/1/2021	51,246,379	14.7%	10.9%	10.9%	7.0%	1.0%	2.4%	8.5%	0.9%	2.1%	3.3%	0.7%	37.5%
4/1/2021	52,370,158	15.3%	11.1%	11.0%	6.1%	1.0%	2.5%	8.6%	0.9%	2.2%	3.3%	0.7%	37.3%
7/1/2021	52,918,092	15.9%	11.4%	11.1%	4.8%	1.0%	2.5%	8.6%	0.8%	2.2%	3.4%	0.7%	37.6%
10/1/2021	53,831,348	16.2%	11.7%	11.0%	4.8%	1.0%	2.5%	8.5%	0.8%	2.3%	3.4%	0.5%	37.4%
1/1/2022	54,770,130	15.5%	11.4%	10.2%	4.6%	1.0%	2.3%	7.8%	0.8%	2.2%	3.1%	0.4%	40.9%
4/1/2022	54,824,091	14.7%	11.0%	9.3%	4.1%	1.0%	2.2%	7.3%	0.7%	2.1%	2.9%	0.4%	44.4%
7/1/2022	55,220,778	13.6%	10.3%	8.7%	3.8%	1.1%	2.1%	6.9%	0.7%	2.1%	2.7%	0.4%	47.5%
10/1/2022	55,893,388	13.2%	10.1%	8.6%	3.6%	1.1%	2.2%	7.0%	0.7%	2.3%	2.7%	0.4%	48.3%
1/1/2023	56,890,678	12.7%	9.8%	8.7%	3.9%	1.4%	2.3%	7.1%	0.7%	2.3%	2.7%	0.4%	48.1%
4/1/2023	57,349,678	12.0%	9.4%	8.7%	4.2%	1.4%	2.2%	6.9%	0.7%	2.4%	2.6%	0.3%	49.1%
7/1/2023	58,137,735	11.0%	8.9%	8.4%	5.0%	1.4%	2.2%	6.6%	0.7%	2.4%	2.5%	0.3%	50.7%
10/1/2023	59,110,151	11.0%	9.1%	8.6%	5.8%	1.4%	2.3%	6.8%	0.8%	2.5%	2.6%	0.3%	48.8%
1/1/2024	60,023,028	10.3%	9.0%	8.7%	6.2%	1.6%	2.3%	6.7%	0.8%	2.6%	2.6%	0.3%	48.9%
4/1/2024	60,277,391	9.9%	8.9%	8.7%	6.0%	1.6%	2.5%	6.7%	0.8%	2.6%	2.6%	0.3%	49.4%
7/1/2024	61,320,831	9.9%	9.1%	9.0%	6.3%	1.7%	2.7%	7.0%	0.8%	2.8%	2.6%	0.3%	47.8%
10/1/2024	61,849,641	9.2%	8.8%	8.8%	7.0%	1.7%	2.5%	6.8%	0.8%	2.8%	2.5%	0.3%	48.8%
1/1/2025	62,654,817	9.1%	9.0%	8.8%	6.8%	1.9%	2.6%	6.8%	0.9%	3.0%	2.5%	0.3%	48.3%

Source: Federal Reserve Board Flow of Funds data and authors calculations.

My own research,[66] based on data up to 2020, shows that banks, especially the largest banks, responded to the post-crisis economic and regulatory developments by changing their funding strategies, scaling back trading activities, reducing labor costs, and altering their investment holdings. Faced with new stringent regulatory capital and liquidity requirements and near-zero short term interest rates, the largest banks rebalanced their asset holdings away from loans to businesses and consumers and toward investments in liquid federal government-guaranteed securities and Federal Reserve interest-bearing deposits.

[66]See, https://www.aei.org/research-products/working-paper/20-years-of-banking-history-in-67-tables-and-charts/ The analysis in this section is based on the analysis in this study but I do provide footnotes with 2025Q1 data updates.

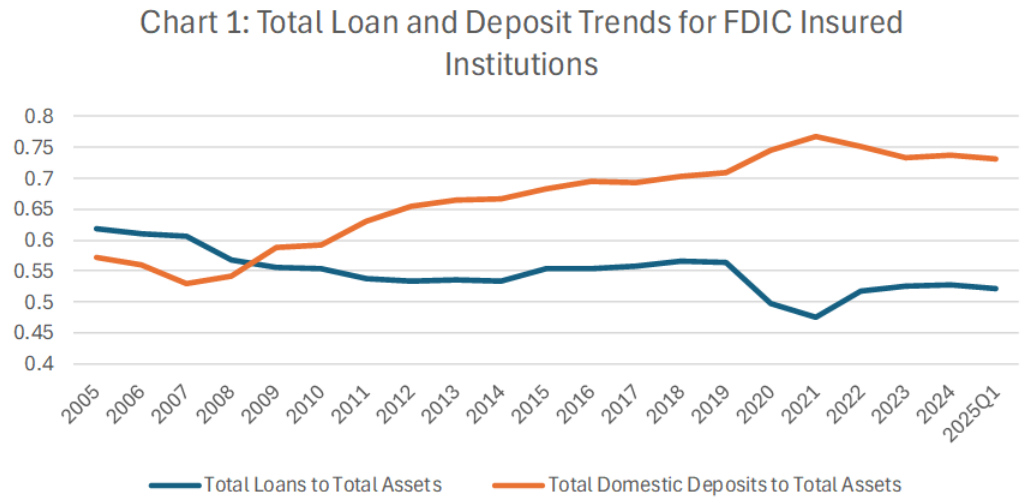
Business and consumer loans carry substantially higher regulatory risk weights (100 to 150 percent under the standardized approach) compared to the risk weights assigned to US Treasury securities and Federal Reserve deposits (0 percent), and federally guaranteed agency securities (0 to 20 percent). The higher an asset's risk weight, the larger the amount of equity that a bank must use to fund each dollar invested in the asset. Minimum equity requirements can also be increased by Dodd-Frank Act mandated leverage constraints if they are binding. The higher share of equity funding lowers the expected return bank shareholders can anticipate earning when the bank invests in that asset. When the government significantly increased the minimum regulatory capital levels the largest banks were required to maintain (at least through 2020) banks adjusted to meet these new requirements by making fewer business and consumer loans and holding more Federal Reserve deposits and government-guaranteed securities.

In 2000, banks with assets in excess of $250 billion invested about 57.5 percent of their assets in loans and leases and about 8.5 percent of their assets in federal government guaranteed securities and Federal Reserve deposits. In 2000, the Federal Reserve did not pay interest on banks' deposits held at Federal Reserve Banks. By 2020, after substantially higher minimum regulatory capital standards were in force and the Federal Reserve paid interest on bank deposits, banks with assets in excess of $250 billion invested 40 percent of their assets in consumer and business loans and over 30 percent of their assets in federally-guaranteed securities and interest-bearing Federal Reserve deposits. In 2021, these 13 banks held 55.6 percent of all assets in the banking system, but only made 44.3 percent of the banking system's total non-government guaranteed business and consumer loans.[67]

Chart 1 shows the trend in aggregate insured banking system's total loans to assets and total domestic deposits to assets. The post-crisis large-bank shift away from loans is reflected in Chart 1. The largest banks hold a disproportionate share of the system assets, so their behavior is the primary driver behind the trends depicted in Chart 1.[68]

[67] According to FDIC data, as of 2025Q1, the ratio of net loans and leases to assets for banks with assets > $250 billion was 41.7 percent.

[68] According to FDIC data, in 2025Q1 insured institutions with assets over $250 billion held 57.7 percent of the insured banking system assets.



Source: FDIC Quarterly Banking Profile data and author's calculations

Commercial and industrial (C&I) loans provide credit to private sector borrowers to help small and not-so-small businesses fund their operations. C&I loans do not require a borrower to secure the loan with real estate. In the year 2000, the largest banks invested over 20 percent of their assets in C&I loans. By 2020, the largest banks' C&I loans accounted for less than 10 percent of their total assets. Business credit was not the only type of credit impacted by the new rules. In 2006, the largest banks held 23.5 percent of their assets in nongovernment-guaranteed 1-to-4 family residential mortgage loans. By 2020, that share dropped to 10 percent.

The Dodd-Frank Act exempted smaller banks from the enhanced prudential capital and liquidity management standards imposed on the largest banks, but they were still required to meet new Basel III minimum regulatory capital rules adopted by banking regulators in 2013. However, small banks could continue to use the so-called "standardized approach" to calculate their minimum capital requirement whereas the largest banks were required to use the Basel III "advanced approach" to calculate the regulatory capital levels they were required to maintain.

Because banks of different asset sizes were subjected to different regulatory regimes, it may not come as a surprise that small and large banks evolved their businesses differently over this period. These differences are apparent when banks are assigned to five different size categories: very small banks with assets under $1 billion; banks with assets between $1 billion and $10 billion; banks with assets between $10 billion and $100 billion; banks with assets between $100 billion and $250 billion; and banks with assets over $250 billion. Banks in the smallest two size categories are typically considered "community banks," although some institutions operating within a localized geographic footprint can accumulate far

more than $10 billion in assets. Banks with assets in the $100-$250 billion range are typically large regional institutions, whereas banks with assets in excess of $250 billion are Dodd-Frank systemically important institutions.

For smaller banks, the switch from the Basel II to Basel III minimum regulatory capital regime added some new higher-risk weight investment categories to the standardized approach, but it left many of the Basel II risk weights unchanged. Under the new standardized approach, small banks did not have to satisfy many of the heightened prudential standards imposed on the largest banks. Small banks were exempt from satisfying the supplementary leverage ratio, the Global Systemically Important Bank (GSIB) supplementary capital requirements, new minimum liquidity requirements and the annual Federal Reserve Board stress testing process, all of which contribute to the amount of capital a Basel III advanced approach bank is required to maintain.

Small banks still faced slightly higher minimum regulatory capital requirements under Basel III primarily because of changes in the definition of regulatory capital and the imposition of a new "capital conservation buffer" that limits an institution's ability to pay dividends or repurchase its shares should its capital fall below designated threshold levels. However, at the time the rule was adopted in 2013, the FDIC estimated that 95 percent of small banks already had sufficient regulatory capital to comply with Basel III.

The data suggest that the adoption of Basel III had only a modest impact on the tradeoff between regulatory capital and profitability faced by small banks. After the adoption of Basel III, smaller banks typically maintained the share of their assets dedicated to funding business, agricultural and consumer loans. The data show that, for all size categories of banks with assets under $250 billion, on average banks increased the share of their assets invested in consumer and business loans. Throughout the period, banks with assets under $100 billion remained the predominant suppliers of commercial real estate loans, multifamily residential mortgages, farmland loans and other agricultural loans.

The Dodd-Frank Act increased federal insurance coverage on deposits to $250,000 per depositor. Banks reacted to the increased insurance coverage in conjunction with the Federal Reserve's post-crisis zero interest rate and QE policies by greatly expanding their use of deposits to fund their operations. The largest banks posted the greatest increase in the share of assets funded with deposits. Banks with assets in excess of $250 billion increased the share of deposits used to fund their assets from 63 percent in

2008 to 80 percent in 2021.[69] Banks with assets between $10 and $250 billion posted similarly large increases in the share of their assets funded with deposits. The smallest banks typically funded their operations using over 80 percent of deposits even before the Great Recession, and so their deposit share of funding increased by only about 3.5 percentage points in the post-crisis period through 2021. The banking system's increase in the use of deposit funding is clearly apparent in Chart 1.

Banks utilized the influx of new deposit financing to reduce their use of more expensive non-government guaranteed funding sources and Federal Home Loan Bank advances. Federal Home Loan Bank advances are available to member banks at subsidized rates, but they require banks to post collateral. In 2000, banks with assets larger than $10 billion used a significant share of long-term subordinated debt to fund their operations. Subordinated debt accounted for as much as 2.4 percent of assets in banks with assets between $100 and $250 billion. Because it has a long maturity, subordinated debt cannot "run" should a bank become distressed. Subordinated debt owners typically suffer losses should an issuing bank fail. By 2020, banks in all size categories had responded to the new regulatory and monetary policy regime by reducing the share of assets funded with subordinated debt to less than 50 basis points.

In addition to jettisoning their subordinated debt, large banks used their new deposits to substantially reduce other funding sources. They reduced funds borrowed using federal funds and other short-term, non-federally-insured instruments. Compared to pre-crisis levels, the borrowed federal funds to asset ratios of banks larger than $10 billion declined by more than 6 percentage points. These banks' "other borrowed funds" to assets ratios declined by over 7 percentage points. For some bank size categories, the declines were much larger.

The reductions in the use of federal funds and other non-federally insured sources of bank credit have important consequences for early-warning indications of underlying financial distress. Uninsured bank creditors historically have been the earliest to recognize institutions in distress. Because these bank creditors take losses if a bank fails, they are active bank monitors. These creditors typically withdraw their funds from the bank or sharply raise the interest rates they charge at the first sign of bank distress. Post-crisis, these private sector bank monitors have effectively been replaced by bank regulators via banks' decision to replace these funding sources with fully federally insured and implicitly-insured deposits. History suggests that the federal government regulators of all types are often slow to

[69] According to FDIC data, in 2025Q1, 77.1 percent of assets of banks lager than $250 in assets are funded with deposits.

recognize problems that emerge on their watch and less than transparent in their public disclosures of underlying problematic issues.

Historically, smaller banks did not make significant use of subordinated debt, federal funds borrowings or other short-term non-insured sources of credit to fund their balance sheets. Many relied on Federal Home Loan Bank advances as a source of funding. When these banks increased their share of deposit funding in the post-crisis period, they typically used the proceeds to reduce their use of Federal Home Loan Bank advances.

Based on my prior research using bank call report data through 2020, banks in all size categories posted increases in their equity-to-asset ratios as they anticipated the US adoption of the Basel II regulatory capital regime. By the time Basel II was formally adopted in 2007, on average, banks in all size categories had increased their equity-to-asset ratios to accommodate the increase in minimum capital required by Basel II. Banks in the smallest size category, assets under $1 billion, historically maintained, on average, the highest equity-to-asset ratios and consequently required the smallest adjustment to meet the new Basel II requirements. In contrast, the largest banks, banks with assets in excess of $250 billion, historically maintained, on average, the lowest equity-to-asset ratios and yet, in anticipation of Basel II, these banks raised their equity-to-asset ratios by only 1.18 percentage points on average. In contrast, banks with assets in the range $10-$250 billion on average raised their equity-to-asset ratios by as much as 4 percentage points.

Relative to the impact of Basel II, the data indicate that the 2013 adoption of Basel III capital regulations had only a muted impact on bank equity-to-asset ratios. Data through 2020 show that many of the largest banks' equity-to-asset ratios declined relative to the peak values they reached in the period between 2010 and 2013.

Subordinated debt is a component of a bank's loss-absorbing capital base. It protects depositors and the deposit insurance fund from losses in the event an issuing bank fails. Large banks' reductions in subordinated debt funding offset the additional loss absorbing capacity generated by the increase in bank equity-to-asset ratios. As a result, the largest banks' average loss absorbing capacity as measured by the ratio of total bank equity plus subordinated debt to assets was only 92 basis points larger in 2020 than in the year 2000. The next section provides a deeper analysis of the evolution of banking system solvency under Dodd-Frank enhanced minimum regulatory requirements.

4.2 Dodd-Frank Act Minimum Tier 1 Leverage Capital Requirements

The analysis focuses on the regulatory Tier 1 leverage ratio as the measure of bank capital adequacy

because, unlike other regulatory measures of capital adequacy, it must be calculated and reported by all FDIC insured banks.[70] The Tier 1 leverage ratio is calculated by dividing a bank's reported Tier 1 capital by its reported Total Assets for the Leverage Ratio.[71]

Tier 1 capital allegedly measures the "loss absorbing capacity" of a bank's total GAAP equity capital. It is calculated by making specific regulatory adjustments to a bank's GAAP balance sheet total equity that include adjustments for components of a bank's accumulated other comprehensive income (AOCI), selected intangible assets, and bank deferred tax assets. Depending on prevailing economic conditions, the AOCI adjustments to GAAP equity capital increase or decrease Tier 1 regulatory capital compared to a bank's GAAP equity.

Under prompt corrective action rules, a bank must have a Tier 1 leverage ratio greater than or equal to 5 percent to be considered "well capitalized" and a Tier 1 leverage ratio between 4 and 5 percent to be considered "adequately capitalized". A bank is "undercapitalized" if its Tier 1 leverage ratio falls below 4 percent and is classified as "significantly undercapitalized' if the ratio dips below 3 percent.

Table 3 reports the year-end Tier1 leverage ratios for all FDIC insured banks from 2019 through 2024, and for 2025Q1. The number of banks that correspond to various leverage ratio ranges are reported for banks of different size categories: banks with assets under $1billion (Table 3a); banks with assets between $1 and $100 billion (Table 3b); banks with assets between $100 and $250 billion (Table 3c); and banks with assets over $250 billion (Table 3d).

Table 3 shows that very few banks are classified as under-capitalized in any year according to their regulatory Tier 1 leverage ratios, and the few banks that qualify as undercapitalized are very small institutions. These data would seem to support often repeated regulatory official claims that the banking system has been well-capitalized over this entire period.

[70] The Tier 1 leverage ratio is reported in FFIEC report variables RCFA7204 and RCOA7204. Roughly 1700 small banks are subject to a simplified community bank leverage ratio regulatory framework that does not require the banks to calculate risk-weighted capital ratios. The FDIC insured depository institutions include depositories regulated by the Federal Reserve, Office of the Comptroller of the Currency and the FDIC. Credit unions are not insured by the FDIC an are excluded from the analysis.

[71] The Tier 1 leverage ratio is reported in FFIEC report variables RCFA7204 and RCOA7204; Tier 1 capital is reported in variables RCFA8274 and RCOA8274; The regulatory measure of total assets is based on a daily average of consolidated assets with specific regulatory adjustments and is reported in variables RCFAA224 and RCOAA224.

Table 3a: Number of banks with assets under $1 billion and reported regulatory Tier1 leverage ratios

Regulatory tier 1 leverage ratio	2019	2020	2021	2022	2023	2024	2025Q1
0.01<=ratio <0.02	2	0	0	0	0	0	0
0.02<=ratio<0.03	2	1	1	0	1	1	1
0.03<=ratio<0.04	2	2	0	0	0	0	0
0.04<=ratio<0.05	3	2	3	2	1	0	1
0.05<=ratio<0.06	5	9	12	5	6	6	8
0.06<=ratio<0.07	21	45	65	40	23	16	10
0.07<=ratio<0.08	79	221	269	190	114	101	86
0.08<=ratio<0.09	400	712	710	536	448	429	396
0.09<=ratio<0.10	817	838	800	779	700	686	684
0.10<=ratio<0.11	810	636	632	639	639	575	575
0.11<=ratio<0.12	611	482	412	437	442	421	423
0.12<=ratio<0.15	982	660	546	621	692	726	737
0.15<=ratio<0.20	421	287	259	285	324	324	321
ratio>.20	273	225	201	236	257	237	235

Table 3b: Number of banks with assets between $1 billion and $100 billion and reported regulatory Tier 1 leverage ratios

Regulatory tier 1 leverage ratio	2019	2020	2021	2022	2023	2024	2025Q1
0.04<=ratio<0.05	0	0	0	0	1	0	0
0.05<=ratio<0.06	0	1	1	2	0	1	1
0.06<=ratio<0.07	1	9	13	3	1	2	2
0.07<=ratio<0.08	24	72	104	52	37	29	26
0.08<=ratio<0.09	97	227	243	197	440	148	136
0.09<=ratio<0.10	194	229	217	268	197	294	288
0.10<=ratio<0.11	201	168	171	197	115	194	214
0.11<=ratio<0.12	104	80	72	84	115	136	144
0.12<=ratio<0.15	104	70	71	91	40	132	140
0.15<=ratio<0.20	30	26	31	39	15	37	41
ratio>.20	15	15	18	19	0	15	18

Table 3c: Number of banks with assets between $100 billion and $250 billion and reported regulatory Tier1 leverage ratios

Regulatory tier 1 leverage ratio	2019	2020	2021	2022	2023	2024	2025Q1
0.06<=Tier1<0.07	0	1	2	1	0	1	1
0.07<=Tier1<0.08	3	3	3	2	2	1	1
0.08<=Tier1<0.09	1	6	9	8	5	3	2
0.09<=Tier1<0.10	4	3	5	5	8	10	9
0.10<=Tier1<0.11	6	5	1	5	2	2	3
0.11<=Tier1<0.12	2	1	3	0	2	1	1
0.12<=Tier1<0.15	3	0	0	0	0	1	1
0.15<=Tier1<0.20	0	1	0	0	0	0	0
Tier 1>.20	0	0	0	0	0	0	0

Table 3d: Number of banks with assets over $250 billion and reported regulatory Tier 1 leverage ratios

Regulatory tier 1 leverage ratio	2019	2020	2021	2022	2023	2024	2025Q1
0.05<=ratio<0.06	0	1	0	0	0	0	0
0.06<=ratio<0.07	1	2	2	2	2	2	2
0.07<=ratio<0.08	0	5	4	3	2	2	2
0.08<=ratio<0.09	6	4	6	5	3	2	1
0.09<=ratio<0.10	2	0	0	1	3	4	4
0.10<=ratio<0.11	0	1	1	2	3	2	4
0.11<=ratio<0.12	0	0	0	0	1	2	0
0.12<=ratio<0.15	1	0	0	0	0	0	1
0.15<=ratio<0.20	0	0	0	0	0	0	0
ratio>.20	0	0	0	0	0	0	0

4.3 Regulatory Capital Rules and Unrealized Interest Rate Losses

If a bank is placed into an FDIC resolution, it is the market value of the bank's assets, not their reported book value that determines the loss the resolution will impose on the DIF. Moreover, for a going concern bank, the market value of banks assets not their reported book value determines the liquidity the bank may acquire by pledging assets as collateral in repurchase agreements, Federal Home Loan Bank advances, or using the Fed's normal (non-emergency) discount window credit. Unrealized interest rate market value losses impact the market value of a bank's equity capital cushion available to support emergency liquidity operations or to absorb losses in a resolution.

Bank's equity capital measured using GAAP includes accumulated other comprehensive income (AOCI). AOCI measures unrealized market value gains and or losses on some bank securities and related hedges. Banks value their loans and held-to-maturity securities at amortized cost less any allowance for anticipated credit losses. Banks can also designate securities as "available for sale" which are recorded at current market value. The cumulative difference between the amortized cost and market value of a bank's available for sale securities constitute unrealized income when the market value exceeds amortized cost, and unrealized loss when market values are less than amortized cost. Banks record this source of unrealized income (or loss) in AOCI. AOCI also includes unrealized gains and losses on available for sale securities that have been reclassified as held-to-maturity, gains and losses on some bank hedging positions (e.g. derivative contracts) reported at market value, and unrealized gains and losses from changes in exchange rates.

AOCI is included as a part of a bank's regulatory capital unless a bank makes a choice to permanently exclude AOCI from regulatory capital measures. Small noncomplex banks had an option to choose to permanently exclude AOCI gains (losses) when calculating bank regulatory capital and most choose to do so. The largest banks and banks using the advanced risk-based regulatory capital approach must include AOCI in their regulatory Tier 1 capital with a single AOCI related adjustment.[72] In December 2019, all but 49 banks opted to exclude AOCI from their Tier 1 capital. By December 2024, the number of large complex banks that were required to include AOCI in their Tier 1 capital increased to 55 banks.

[72] Large complex banks include AOCI "LESS: Accumulated net gain (loss) on cash flow hedges included in AOCI, net of applicable income taxes, that relates to the hedging of items that are not recognized at fair value on the balance sheet (if a gain, report as a positive value [which is a subtraction from GAAP capital to arrive at tier1 common equity]; if a loss, report as a negative value [which is an addition to GAAP capital to arrive at tier1 common equity])

Many banks hold long-maturity fix-rate securities in their hold-to-maturity (HTM) portfolios. These securities are carried at amortized cost. Market-value gains and losses on these investments are not recorded as income and are not reflected in a bank's reported book equity or regulatory capital accounts. Large decreases or increases in interest rates can create substantial unrealized market-value gains or losses on banks' HTM securities portfolios. Banks' unrecognized gains or losses on HTM securities can be calculated from regulatory Call Report data that reports the amortized cost and the current market value of these bank securities.

Banks report their loan and lease investments at amortized cost net of an allowance for loan and lease credit losses. Many bank loans are made at fixed rates and have long maturities. If marked-to-market, loans with these characteristics will have suffered substantial losses from the interest rate increases posted since March 2022. However, banks are not required to estimate and report current market value estimates of their loans and leases on their regulatory Call Reports so current market values must be estimated. I use a simple econometric approach to estimate the magnitude of the unrealized interest rate losses on the market value of each bank's loans. My estimates of these losses are described elsewhere,[73] and are almost certainly conservative, meaning the estimates likely understate the true market losses on bank loan investments.

Table 4a-4d show my estimates of market-value adjusted Tier 1 regulatory capital ratios for all insured depository institutions based on year-end bank call report data from 2019 to 2024, and estimates for the first quarter of 2025. Banks with mark-to-market (MTM) adjusted ratios below 3 are shown in color (purple and red). Banks with estimated *negative* mark-to-market (MTM) adjusted ratios are shown in red.

The estimates in Table 4 show that, once the Fed started raising interest rate in 2022, a very large number of banks had substantial unrealized interest rate losses that reduced the mark value of their assets and regulatory capital to very low, and in many cases negative levels. The 2022 data in Table 4 reflect end-of-year bank positions. The estimates show that over 1000 small banks were severely undercapitalized on a market-value basis, including more than 300 with negative mark-to-market adjusted Tier 1 leverage ratios. Ten banks with assets between $100 and $250 billion were severely undercapitalized including 3 banks with negative estimated market-value adjusted capital, including SVB

[73] See for example https://www.aei.org/research-products/journal-publication/systemic-risk-and-unrealized-losses-in-the-banking-system/ or https://www.aei.org/research-products/journal-publication/commercial-real-estate-exposure-and-bank-counterparty-risk/

and First Republic Bank. Moreover 6 banks with assets over $250 billion were severely undercapitalized on a mark-to-market basis, including 2 with negative Tier 1 capital estimates. While somewhat diminished, unrealized interest rate losses have continued to be a systemic issue that is not reflected in minimum regulatory capital requirements through 2025Q1.

Table 4a: Number of banks with assets under $1 billion and MTM-adjusted regulatory Tier1 leverage ratios

Adjusted Regulatory Tier 1 Leverage Ratio	2019	2020	2021	2022	2023	2024	2025Q1
Tier1 <-.10	0	0	0	1	1	1	1
-0.1<=Tier1<-0.05	0	0	0	6	2	4	5
-0.05<=Tier1<-0.04	0	0	0	6	1	5	2
-0.04<=Tier1<-0.03	0	0	0	17	8	6	6
-0.03<=Tier1<-0.02	0	0	0	46	16	14	5
-0.02<=Tier1<-0.01	0	0	0	90	36	38	19
-0.01<=Tier1<0.0	0	0	0	162	76	52	66
0.0<=Tier1<0.01	0	0	0	245	193	105	86
0.01<=Tier1<0.02	1	0	0	318	281	139	166
0.02<=Tier1<0.03	3	0	1	418	395	232	251
0.03<=Tier1<0.04	2	1	0	453	470	278	307
0.04<=Tier1<0.05	2	2	3	441	446	386	403
0.05<=Tier1<0.06	4	0	13	369	399	426	435
0.06<=Tier1<0.07	9	4	52	284	300	377	352
0.07<=Tier1<0.08	43	16	176	212	215	349	296
0.08<=Tier1<0.09	171	62	500	151	159	233	242
0.09<=Tier1<0.10	582	224	789	96	136	191	174
0.10<=Tier1<0.11	811	615	684	73	84	159	152
0.11<=Tier1<0.12	756	781	510	51	68	101	99
0.12<=Tier1<0.15	1220	1520	662	118	133	168	164
0.15<=Tier1<0.20	530	603	305	69	78	105	87
Tier 1>.20	294	292	215	144	150	153	159

Table 4b: Number of banks with assets between $1-100 billion and MTM-adjusted regulatory Tier1 leverage ratios

Adjusted Regulatory Tier 1 Leverage Ratio	2019	2020	2021	2022	2023	2024	2025Q1
-0.04<=Tier1<-0.03	0	0	0	0	1	1	1
-0.03<=Tier1<-0.02	0	0	0	0	0	1	0
-0.02<=Tier1<-0.01	0	0	0	0	0	1	0
-0.01<=Tier1<0.0	0	0	0	0	0	0	1
0.0<=Tier1<0.01	0	0	0	92	56	43	22
0.01<=Tier1<0.02	0	0	0	121	100	46	39
0.02<=Tier1<0.03	0	0	0	151	146	82	76
0.03<=Tier1<0.04	0	0	0	127	152	135	124
0.04<=Tier1<0.05	0	0	0	115	147	144	157
0.05<=Tier1<0.06	0	0	2	80	109	164	168
0.06<=Tier1<0.07	2	0	15	35	64	108	127
0.07<=Tier1<0.08	14	3	87	28	47	75	87
0.08<=Tier1<0.09	46	17	193	24	48	51	64
0.09<=Tier1<0.10	143	71	225	18	12	33	35
0.10<=Tier1<0.11	216	182	184	11	6	19	24
0.11<=Tier1<0.12	150	225	96	6	18	16	12
0.12<=Tier1<0.15	148	319	86	15	8	23	31
0.15<=Tier1<0.20	33	58	33	7	11	11	10
Tier 1>.20	18	22	20	11	0	11	14

Table 4c: Number of banks with assets between $100-250 billion and MTM-adjusted regulatory Tier1 leverage ratios

Adjusted Regulatory Tier 1 Leverage Ratio	2019	2020	2021	2022	2023	2024	2025Q1
-0.03<=Tier1<-0.02	0	0	0	1	0	0	0
-0.02<=Tier1<-0.01	0	0	0	1	1	1	0
-0.01<=Tier1<0.0	0	0	0	1	0	0	1
0.0<=Tier1<0.01	0	0	0	2	0	0	0
0.01<=Tier1<0.02	0	0	0	2	2	2	1
0.02<=Tier1<0.03	0	0	0	3	1	1	0
0.03<=Tier1<0.04	0	0	0	3	4	2	2
0.04<=Tier1<0.05	0	0	0	2	3	4	3
0.05<=Tier1<0.06	0	0	0	0	3	2	3
0.06<=Tier1<0.07	0	0	2	1	1	2	2
0.07<=Tier1<0.08	3	1	4	4	2	3	2
0.08<=Tier1<0.09	0	1	8	1	2	1	3
0.09<=Tier1<0.10	3	2	5	0	0	1	1
0.10<=Tier1<0.11	8	2	1	0	0	0	0
0.11<=Tier1<0.12	3	8	2	0	0	0	0
0.12<=Tier1<0.15	2	5	1	0	0	0	0
0.15<=Tier1<0.20	0	0	0	0	0	0	0
Tier 1>.20	0	1	0	0	0	0	0

Table 4d: Number of banks with assets over $250 billion and MTM-adjusted regulatory Tier1 leverage ratios

Adjusted Regulatory Tier 1 Leverage Ratio	2019	2020	2021	2022	2023	2024	2025Q1
-0.03<=Tier1<-0.02	0	0	0	1	0	0	0
-0.02<=Tier1<-0.01	0	0	0	0	0	0	0
-0.01<=Tier1<0.0	0	0	0	1	0	0	0
0.0<=Tier1<0.01	0	0	0	2	1	0	0
0.01<=Tier1<0.02	0	0	0	0	2	2	1
0.02<=Tier1<0.03	0	0	0	2	1	1	0
0.03<=Tier1<0.04	0	0	0	1	3	3	4
0.04<=Tier1<0.05	0	0	0	2	2	2	1
0.05<=Tier1<0.06	0	0	0	3	1	3	3
0.06<=Tier1<0.07	0	0	3	0	3	2	1
0.07<=Tier1<0.08	1	3	5	0	0	0	3
0.08<=Tier1<0.09	5	1	4	1	0	0	0
0.09<=Tier1<0.10	3	5	0	0	1	0	0
0.10<=Tier1<0.11	0	3	1	0	0	1	1
0.11<=Tier1<0.12	0	1	0	0	0	0	0
0.12<=Tier1<0.15	1	0	0	0	0	0	0

4.4 Measures Taken to Address the Risks in Securitizations

Securitization and related credit risk transfer products like credit default swaps that reference specific tranches of securitizations and re-securitizations played a central role in creating the excessive leverage and risk concentrations that caused the financial institution failures that triggered the 2008 financial crisis. The Dodd-Frank Act included several separate provisions that were designed to control the risks associated with securitizations and credit risk transfers. These included creation of the CFPB to protect consumers from predatory loan products with underwriting standards that virtually ensured that a high share of borrowers would default because borrowers lacked the resources to repay their loans. The Dodd-Frank Act required enhanced regulatory capital requirements on the large complex institutions involved in creating securitizations, re-securitizations and other credit risk transfer products. The Act introduced a new minimum "skin in the game" risk retention requirement for securitizations and re-securitizations. The Act also tightened the supervisory oversight over the NRSROs including enforcing new ratings transparency and conflict of interest rules and requiring annual compliance examinations.

4.4(a) Securitization Minimum Risk-based Capital Requirements

Basel III was the regulators' response to the Dodd-Frank Act's mandatory enhanced risk-based capital requirements for systemically important financial institutions. Regarding securitization and re-

securitizations, Basel III capital requirements replaced the NRSRO ratings-based risk weights that were in use during the Great Financial Crisis with risk weights determined by a supervisory formula.[74]

Most bank use the "simplified approach" to calculate the minimum capital for their CDO bond investments. The simplified approach uses a supervisory formula to calculate the risk weight for a securitization tranche using several inputs that measure the risk of the underlying collateral pool, the share of past due or defaulted assets in the pool, the subordination level of the tranche (the cumulative share of pool assets in tranches that bear losses before the tranche in question), the collateral pool of the trance in question in addition to the share of the collateral pool in all subordinated tranches (i.e., the subordination level supporting the tranche plus the tranche "thickness") . The formula also includes a parameter set by regulator known as the p-factor that in part determines the risk weight associated with a tranche. The p-factor is currently set at 0.5 for securitizations and 1.5 for re-securitizations. Securitization exposures are also subject to a 20 percent risk-weight floor.

Large complex institutions approved to use their own internal models to calculate their minimum regulatory credit risk capital requirements can use an advanced approach for calculating the risk weights of their securitization exposures. The advanced approach uses a supervisory formula with inputs that represent the tranche subordination level, thickness, the collateral pool's exposure-weighted average loss given default and a supervisory factor called the KIRB (which I am not going to attempt to explain).[75]

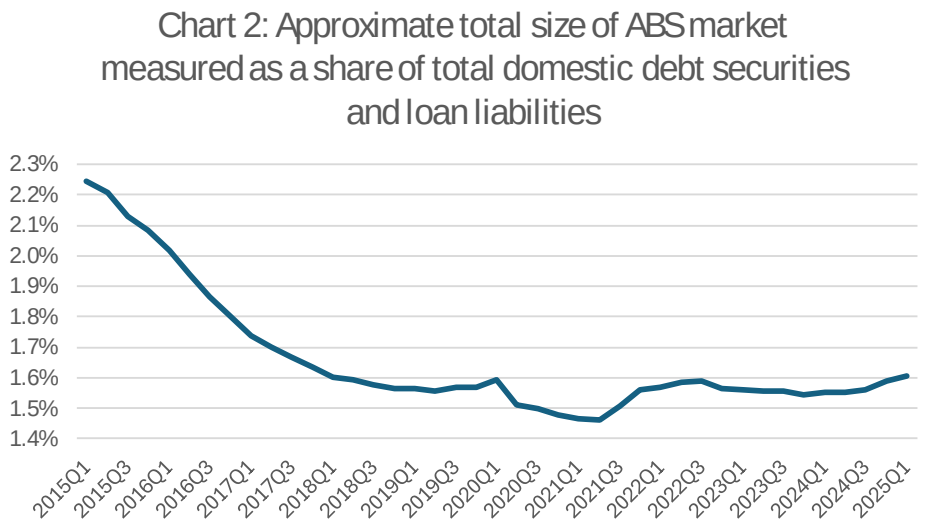
Chart 2 plots the approximate share of private-label ABS securities in domestic financial intermediation since 2015. ABS SPVs and SIVs must pass through more than 95 percent of their earnings to be tax exempt so the value of their liabilities (the securities) ABS issue must be close to the value of the collateral (assets) they own. The Federal Reserve Flow of Funds reports on the loan (see Table 1) and debt security assets owned by ABS issuers, but ABS collateral includes other assets like leases and tranches of other ABS securities. My measure of ABS activity is the Federal Reserve Flow of Funds Quarterly estimate of ABS total liabilities outstanding divided by Fed's estimate of total loan and debt security liabilities outstanding in a quarter. This estimate of ABS "market share" shows that ABS intermediation activity has declined as Dodd-Frank related regulations were phased in. While the measure I use is different, my finding are consistent with the finding of a 2017 U.S. Treasury report[76] and

[74] See, the FDIC worksheet available at: https://www.fdic.gov/news/financial-institution-letters/2015/fil15007.html#:~:text=Summary:,savings%20associations%2C%20including%20community%20institutions.

[75] For the details, see, https://www.occ.gov/publications-and-resources/publications/guidance-on-advanced-approaches/files/pub-gaa-2013-1.pdf

[76] https://home.treasury.gov/system/files/136/A-Financial-System-Capital-Markets-FINAL-FINAL.pdf

a more recent Bank Policy Institute report[77] that uses SIMFA data.



4.4(b) Minimum Risk Retention Requirements

Given the risk diversification benefits of well-designed and executed securitizations, the aforementioned 2017 US Treasury report calls for revisions to the securitization minimum capital rules to reinvigorate ABS market activity. In considering revisions to minimum capital regulations, it is important to note that securitization activity has also been impacted by Dodd-Frank risk-retention rules.

Section 941 of the Act requires that agents creating and selling ABS retain an economic interest in the credit risk the securitization transfers to third parties. The prescribed minimum required retention rate is 5 percent for all ABS except for securitizations except where the entire collateral pool is comprised of residential mortgages that meet the minimum requirements set by the "Qualified Residential Mortgage" (QRM) rule as prescribed by the CFPB or for ABS with collateral pools that meet strict underwriting standards set by federal bank regulators. Residential MBS guaranteed the federal housing GSEs by definition meet risk retention rules since the GSE's insure the default risk of the entire mortgage pool.

"Qualified assets" are collateral that meets the prescribed strict underwriting standards set by bank regulatory agencies. The retention rate for securitizations with collateral pools that are 100 percent qualified assets is zero. A securitization with collateral that includes a partial share of qualified assets receives pro rata reduction in its required retention rate subject to a 2.5 percent minimum retention rate. In practice, the 5 percent retention rule applies to many types of asset-backed securitizations

[77] https://bpi.com/post-crisis-regulatory-reforms-and-the-decline-of-securitization/#_ftn5

where the collateral pool is neither entirely qualified mortgages or includes qualified assets.[78]

The mortgage underwriting standards needed to meet the QRM rule and mortgage collateral deemed acceptable by the federal housing GSEs (discussed in a subsequent section) have been liberalized so that borrowers can qualify for mortgages given the inflation residential property values have experienced since 2020.

Regarding non-mortgage private label ABS issuance, the delinquency rates of auto loans and credit cards have been rising since late 2021[79]. Given retention requirements, an anticipated high delinquency rate is a factor that would tend to depress auto loan and credit card securitizations, trends that are documented in the recent Bank Policy Institute Report.[80]

4.4(c) NRSRO regulation

Given the minimum regulatory capital requirements in place at the time, overly optimistic NRSRO ratings made it profitable to securitize poorly underwritten subprime mortgages that otherwise would not have been economic. The Dodd-Frank Act created the OCR and required it improve the transparency of the NRSRO rating process and police NRSRO conflicts of interest.

While NRSRO ratings were slow to be downgraded as the probability for losses on bank-related securities increased in the summer and fall of 2022, the Dodd-Frank Act regulatory provisions regarding NRSROs appear to working more or less as intended, at least according to the information I have been able to find. The SEC's OCR reports annually on its own regulatory activities as well as on the annual ratings activities of the NRSROs it supervises.[81] It reports on industry trends and identifies specific ratings categories where prior ratings have been or are expected to be inaccurate—in particular, overly optimistic given subsequent economic developments. In its most recent annual report, the OCR highlights substandard rating performance for prior ratings associated with commercial real estate credit collateral. While not identifying the institution involved, it reports on specific OCR rule violations discovered in the course of its NRSROs annual examinations and on the actions undertaken by the NRSRO to remediate the issue.

[78] See for example, https://www.morganlewis.com/-/media/files/publication/morgan-lewis-title/white-paper/2024/guide-to-the-credit-risk-retention-rules-for-securitizations.pdf?rev=d0d11ddfda4c4211b11c74108f9cbf28&hash=0CF7DC199F7BB7ADC5B6B28EFD2D8EB9
[79] See, for example https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC_2025Q1
[80] https://bpi.com/post-crisis-regulatory-reforms-and-the-decline-of-securitization/#_ftn5
[81] https://www.sec.gov/files/jan-2025-ocr-staff-report.pdf

4.4(d) QRM and GSE mortgage underwriting standards now accept risky mortgages

Under the 2014 CFPB Qualified Residential Mortgage ability to repay rule, among other underwriting restrictions, a mortgage could have at most a 43 percent debt-to-income ratio (DTI) to be classified as a qualified mortgage (QM). A QM certification gives a loan originator "safe harbor" from legal liability should an originated loan subsequently default. Unless a mortgage qualifies as a QM, the lender could be subject to legal damage claims that the lender failed to establish that a borrower had the means to repay the mortgage as required by law.

Qualified mortgages are eligible to be securitized by private-label securitizes with a zero-risk retention rate. Fannie Mae and Freddie Mac are not formerly bound by the CFPB QRM rules. However, the Dodd-Frank Act exempts federal housing GSE's securitizations from the risk retention rule which in practice makes mortgages eligible for a housing GSE securitization a QM mortgages. In the so-called GSE patch, Fannie and Freddie adopted minimum mortgage collateral standards that, while similar in many respects to the 2014 CFPB rule, allowed higher (DTIs).

Residential home price inflation and higher mortgage rates experienced in recent years have put pressure on borrowers' abilities to qualify for QM mortgages under earlier standards. As a consequence, DTI standards have been relaxed. According to data from the AEI's Housing Center,[82] in the early 1990s, when mortgage rates were in the 7-8 percent range, the average debt-to-income (DTI) ratio for FHA purchase loans was 34 percent. Today, the average DTI on FHA loans is 46 percent even though mortgage rates have typically been below 7 percent.

Recent years have seen the distribution of DTI rates on all government guaranteed mortgages shift toward higher DTI rates. A large share of housing GSE loans have DTIs near the GSE's maximum allowable value of 50%. The maximum allowable DTI for FHA loans currently is 57%. Many believe that the trend toward increasing DTIs have helped fuel home price appreciation and increased the residential mortgage risk as these elevated DTI ratios leave little room for saving or unexpected expenses.

4.5 Orderly liquidation authority

The FDIC is the administrator of the Federal Deposit Insurance Fund (DIF) and the receiver of failed insured depository institutions. Since the passage of FDICIA in 1991, in its capacity as receiver for failed insured depositories, Section 141 requires the FDIC to resolve a failed depository institution in manner

[82] See, https://www.aei.org/research-products/report/aei-housing-market-indicators-june-2025/

that imposes the least cost on the deposit insurance fund unless the Secretary of the Treasury declares a systemic risk exception. The Section 141(G) of FDICIA allows that if:

> …[U]pon the written recommendation of the *[FDIC]* Board of Directors (upon a vote of not less than two-thirds of the members of the Board of Directors) and the Board of Governors of the Federal Reserve System (upon a vote of not less than two-thirds of the members of such Board), the Secretary of the Treasury (in consultation with the President) determines that— (I) the Corporation's compliance with…*[a least cost resolution of]*… an insured depository institution would have serious adverse effects on economic conditions or financial stability; and (II) any action or assistance under this subparagraph would avoid or mitigate such adverse effects, the Corporation may take other action or provide assistance under this section as necessary to avoid or mitigate such effects. [italics added]

The FDIC is empowered to fund DIF resolutions with the resources of the DIF or by pledging receivership assets to borrow from the Federal Financing Bank[83] or by tapping the DIF's $100 billion line of credit with the U.S. Treasury.

In addition to the FDIC's duty to act as the receiver of failed insured depository institutions, Dodd-Frank Title II Orderly Liquidation Authority (OLA) gave the FDIC power to function as the receiver for bank holding companies, financial holding companies and other financial firms should government authorities determine that the nonbank financial firm in question is in danger of failing and its failure and resolution under the bankruptcy code would have negative systemic consequences and create larger losses throughout the financial system. Use of the OLA powers requires a formal Systemic Risk Determination made by the Secretary of the Treasury in consultation with the President and financial regulatory authorities.

The FDIC can use an Orderly Liquidation Fund ("OLF") line of credit with the U.S. Treasury to fund a non-bank systemically important financial institution in receivership. OLF borrowing are to repaid by selling the assets in the receivership or, if needed, by special assessment on large systemically important institutions.

Under the FDICIA as amended, the FDIC is empowered to recover the Deposit Insurance Fund cost of a systemic risk exception resolution through "1 or more special assessments on insured depository institutions, depository institution holding companies (with the concurrence of the Secretary of the Treasury with respect to holding companies), or both, as the Corporation determines to be appropriate"

[83] https://ffb.treasury.gov/about/

[12 U.S.C. 1823(c)(4)(G)(ii)(I).]

As discussed in the introduction, The SVB and Signature Bank failures required authorities to declare a systemic risk exception and provide a blanket guarantee for all depositors in SVB and Signature Bank. This decision substantially increased the cost of these bank resolutions, particularly so in the case of SVB because 95 percent of its deposits were uninsured.

It turned out that SVB's holding company had close to $2 billion in deposits in SVB bank that went undetected by the FDIC when drafting the terms of the systemic risk exception. This fact alone indicates problematic FDIC management as the FDIC has regulations in place that give the agency timely access to depositor ownership records and to certain capital market transactions to allow the agency to make DIF exposure assessments for failing banks. Regardless, the blanket guarantee issued in the systemic risk exception did not explicitly exclude any SVB depositors and the ownership of SVB's holding company deposits remains in legal dispute today.

If federal authorities had made a systemic risk declaration and invoked OLA in addition to declaring a systemic risk exception under the FDI Act they would have released the FDIC from its least-cost resolution duty, allowing it to provide unlimited insurance SVB depositors, and allowed the FDIC to place the SVB's holding company into an OLA receivership, liquidate its assets, and use the proceeds to offset DIF losses incurred from the blanket deposit guarantee on SVB's deposits. I have seen no public discussion of why authorities did not use their Dodd-Frank Act OLA powers in this resolution.

The FDIC has a $100 billion line of credit it can use to fund DIF receiverships and the legal authority to pledge receivership assets and use Federal Financing Bank funding. The OLF has a line of credit with the Treasury which has a limit that is stated in terms of a percentage of the value of the assets of the financial firm in OLA receivership.

However, the US Treasury reached the Congressional debt ceiling limit in January 2023. Borrowing using the DIF's $100 billion line of credit with the US Treasury counts against the Congressional debt ceiling as does any borrowings made by the OLF. Borrowings made by the Federal Financing Bank are excluded from debt ceiling calculations but are limited to $15 billion in total by law. It appears that the OLA could not be used, at least in part, because OLF funding was precluded by a binding Congressional debt ceiling.

The balance in the DIF in March 2023 was about $116 billion. The FDIC could not risk draining the DIF to fund one resolution when there was risk of widespread depositor runs. The DIF needed in excess of $160 billion to fund the SVB receivership alone, and it could not tap the DIF line of credit with the US

Treasury because of the binding Congressional debt ceiling.

The DIF was forced to use SVB's OCC-chartered bridge bank to borrow from the Federal Reserve discount window using the Fed's "Secondary Credit Facility" that charges a 50 basis point penalty rate of interest over the Fed's primary credit discount rate.

By the end of March 2023, the DIF was paying the Fed 5.5 percent on its SVB-related loans while the 3-month Treasury rate was about 4.7 percent. The end result of these funding complications was that, through special DIF assessments, the largest banks' special DIF insurance assessments included charges for a 70 basis point penalty rate on hundreds of billion dollars in Federal Reserve loans because of a binding Congressional debt ceiling and Treasury funding access issues that were not anticipated when existing laws were enacted.

4.6 FSOC identification of systemic risk

In theory, the Financial Stability Oversight Council (FSOC) was created to enhance the federal financial regulatory agencies' ability to maintain financial stability by discharging their responsibilities to monitor financial institutions to ensure that they comply with applicable safety and soundness regulations. In practice, the FSOC has failed to identify and ensure that FSOC members proactively take steps to mitigate risks associated with products, processes, and institutions that subsequently triggered financial instability. The FSOC has instead often acted as an agent of the administration in power to implement a political agenda unrelated to financial sector systemic risk. Some examples include:[84]

- The FSOC failed to identify FTX as a systemic risk in a Digital Asset report it released just a month prior to the FTX failure.
- The FSOC and its bank regulatory agency members failed to identify the risk associated with legally permitted banking services that attracted large uninsured deposits from crypto-businesses that banks invested in long-maturity assets thereby creating interest rate risk and ultimately large losses and bank failures when the Fed increased interest rates.
- The FSOC and its bank regulatory agency members failed to identify and proactively take steps to mitigate the risk caused by maturity mismatches, and massive unrealized interest rate losses

[84] For a more detailed discussion of the FSOC's failure to live up to its Dodd-Frank Act stated objectives, please see my prior January 10, 2024 testimony before the House Subcommittee on Digital Assets, Financial Technology, and Inclusion On "Regulatory Whiplash: Examining the Impact of FSOC's Ever-changing Designation Framework on Innovation." https://www.aei.org/wp-content/uploads/2024/01/Kupiec-Jaunuary-10-Digital-Asset-Suncommittee-testimony.pdf?x85095

in over 1000 banks which lead to depositor runs and bank failures.

- Instead of performing as a body that objectively identifies financial stability risks and promotes transparent improvements in financial safety and soundness supervision and regulation, the FSOC's activities have become highly politicized.
- The FSOC has revised the standards and procedures that govern the discharge of its Section 112 and 113 powers each time the political party governing the executive branch.
- The FSOC favors the use of opaque Federal Reserve Board stress tests to measure and regulate risks it identifies instead of recommending transparent and publicly verifiable risk measures.
- No FSOC annual report prior to 2021 mentioned climate change as a systemic risk threatening financial stability nor is there any evidence that climate change has historically been an important factor causing bank failures and yet financial sector regulations to curb climate change became the focus of the FSOC's systemic risk recommendations.
- The FSOC's recommendation to impose climate change regulations on banks and other financial institutions was not the result of objective data analysis, but was the execution of a political plan to discourage investments in fossil fuel related activities hatched well before the current administration was elected.
- Climate change ceased to be an FSOC priority when the party in power subsequently changed.
- The policy uncertainty created by the politicization of the FSOC discourages private sector investment and financial services innovation
- Congress should revisit the Dodd-Frank Act and repeal the FSOC's Section 113 powers and instead make it an advisory body that provides recommendation for new regulations to Congress who must subsequently pass legislation should the Congress decide to adopt the FSOC's recommendation.