

DEREGULATION AND THE SUBPRIME CRISIS

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ABSTRACT

Many popular and academic commentators identify deregulation as a primary cause of the 2007-08 financial crisis. While not all versions of the argument are identical, one of the most common contends that discrete regulatory changes from 1999 to 2004 enabled commercial and investment banks to take excessive risks. A more sweeping version contends that stringent regulation of banking from the New Deal to roughly 1980 produced a golden age in which there were no systemic banking crises but that subsequent deregulation led to crisis-prone banking. The deregulation hypothesis supports stricter regulation as a path to financial stability.

This Article argues that regulated banks and the shadow banking system had the legal authority to do what they did during the subprime crisis for decades before 2007-08. Deregulation cannot, therefore, explain either the timing of the crisis or the specific practices that characterized it. I further argue that the era of stable banking was the result of a predictable interest rate environment, not prudential regulation. There is no reason to believe that reinstating specific New Deal-era regulatory policies will make banks stable in a world of interest rate and exchange rate volatility.

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INTRODUCTION

Let's first of all understand that the biggest problem in this whole process was the deregulation of the financial system.

—Barack Obama, 2008¹

Presidential candidate Barack Obama spoke these words less than a month after Lehman Brothers' bankruptcy filing. Prominent economists, including Alan Blinder, Paul Krugman, and Joseph Stiglitz, would soon join him in claiming that deregulation was a primary cause of the 2007-08 subprime crisis.²

Proponents of the deregulation hypothesis frequently argue that specific statutory changes, including the partial repeal of the Glass-Steagall Act (GSA) in 1999 and the enactment of the Commodity Futures Modernization Act of 2000 (CFMA), led to greater financial risk-taking prior to the crisis. A more sweeping version of the hypothesis holds that stringent New Deal-era regulation produced a stable and low-risk banking system, but the deregulatory movement beginning in the 1970s dismantled regulatory restrictions and thereby created a riskier, more failure-prone banking system. Both versions of the deregulatory hypothesis support a policy of heavier regulation of financial institutions and markets.

Several commentators have identified specific holes in the deregulation hypothesis.³ Surprisingly, however, there has been no comprehensive accounting of the many regulatory changes from the 1970s to the time of the crisis and whether they freed banks, investment banks, and other financial institutions to engage in the specific lines of business that brought them to insolvency in 2007-08. That is the purpose of this article.

¹ *Excerpts From the Second Presidential Debate*, N.Y. TIMES, October 8, 2008, at A20.

² See, e.g., ALAN S. BLINDER, *AFTER THE MUSIC STOPPED* (2014); JOSEPH E. STIGLITZ, *FREEFALL: AMERICA, FREE MARKETS, AND THE SINKING OF THE WORLD ECONOMY* (2010); Joseph E. Stiglitz, *The Anatomy of a Murder: Who Killed America's Economy?*, 21 CRITICAL REV. 329 (2009).

³ See, e.g., David Barker, *Is deregulation to blame for the financial crisis?*, 18 WESTLAW J. BANK & LENDER LIA. (2012); Bethany McLean, *The meltdown explanation that melts away*, REUTERS (March 19, 2012), available at <http://blogs.reuters.com/bethany-mclean/2012/03/19/the-meltdown-explanation-that-melts-away/>; Norbert J. Michel, *The Glass-Steagall Act: Unraveling the Myth*, HERITAGE FOUNDATION BACKGROUNDER NO. 3104 (2016); Peter J. Wallison, "Did the 'repeal' of Glass-Steagall Have Any Role in the Financial Crisis? Not Guilty. Not Even Close." (Policy Brief 2009-PB-09, Indiana State University, November 2009).

The reader may share the author's initial skepticism that the effort is necessary. But the deregulation hypothesis remains widespread in political and popular discourse. Both major political parties called for the reinstatement of GSA in their 2016 platforms. Popular articles and books routinely state that GSA kept banks from taking excessive risks with depositors' money and that the CFMA paved the way for credit default swaps.⁴

Moreover, something *did* change beginning in the 1970s. The critics are correct to note that banks were relatively safe and stable from the end of the New Deal era until that time. It is important to understand why this was so in order to determine appropriate regulatory policies today.

I argue that the changes in bank risk taking and stability beginning in the 1970s were not principally a consequence of changes in banking, securities, and derivatives regulation. They were instead a result of the end of an era of stable interest rates that extended from the beginning of World War II until the early 1970s. As soon as economic conditions changed, banks became riskier. This was not a consequence of deregulation but of a much more volatile and challenging interest rate environment.

But was the "golden age" of stable rates itself the result of stringent regulation? Both monetary and regulatory policy immediately after the New Deal had the explicit goal of maintaining low nominal interest rates regardless of inflation and other economic conditions. However, those policies—central bank subordination to the Treasury Department, caps on the interest rates on bank deposits, and other attempts to increase government control over interest rates—are not what critics generally mean when they champion "strict" regulation of financial markets.

That is at least true to date. I end the article with some cautionary observations about the fine line that separates the regulation of risk-taking from the attempt to control nominal interest rates in the formal financial sector. One way to make banking low-risk is to force banks to do most

⁴ See, e.g., Gillian White and Bouree Lam, Could Reviving a Defunct Banking Rule Prevent a Future Crisis, available at <http://www.theatlantic.com/business/archive/2016/08/glass-steagall/496856/> (quoting former Labor secretary Robert Reich: "why were the banks able to [investment banks] easy credit on bad collateral? Because [GSA] was gone."); Nomi Prins, What a Hillary Clinton Presidency Means for Your Financial Future, available at <https://www.thenation.com/article/what-a-hillary-clinton-presidency-means-for-your-financial-future/> (GSA "separated people's bank deposits ... from any kind of risky bets" and CFMA "allowed Wall Street to concoct devastating unregulated side bets")

of their lending to the government at artificially low rates and make savers a captive audience prevented from seeking a market rate of return.

In the developing country context, such policies are referred to as “financially repressive.” They impose low or negative real returns on small savers. The motivation is to finance government spending on the cheap. They tend to make banks low-risk and low return, but those effect are purely incidental. Unless we define the basic building blocks of the post-1970s global economy—floating exchange rates, capital convertibility, central bank independence, and market determination of returns on savings, as “deregulation,” then deregulation did not cause the financial crisis.

The article proceeds as follows. Part I sets the stage by describing the financial practices and institutions at the center of the crisis. Part II demonstrates that all of them—shadow banking, mortgage securitization, subprime lending, over-the-counter derivatives, highly leveraged investment banks, and the combination of commercial and investment banking under the same roof—were permissible and taking place for decades before the crisis. There is no causal link between the regulatory changes that critics commonly cite and the crisis of 2007-08. Part III argues that the growing riskiness of banking from the 1970s forward reflects economic rather than regulatory changes. It also describes the government’s attempts during the postwar era to manage nominal interest rates. These may never have worked and in any event became futile in a globalized financial system and were abandoned. Part IV concludes.

I. WHAT HAPPENED?

Before we can assess arguments about the role of deregulation in the financial crisis, we must understand the crisis itself. The general outline is straightforward.⁵ Real estate lending increased sharply in the early 2000s as residential real estate prices rose, leading to an equally sharp increase in bank assets. Many of the mortgage loans were subprime, meaning they did not meet traditional underwriting standards. Most mortgage loans were securitized, creating residential mortgage-backed securities (RMBS). Tranches of RMBS were often re-securitized as part of collateralized debt obligations (CDOs). CDOs are debt securities is-

⁵ My account largely tracks that in GARY B. GORTON, *SLAPPED BY THE INVISIBLE HAND: THE PANIC OF 2007* (2010). For a description of the crisis that agrees on essential details but differs on issues of interpretation, see ALAN S. BLINDER, *AFTER THE MUSIC STOPPED: THE FINANCIAL CRISIS, THE RESPONSE, AND THE WORK AHEAD* (2013).

sued by special purpose entities; if collateralized by asset-backed securities (ABS), including RMBS, they are sometimes called ABS CDOs.

As house prices began to decline and mortgage payment delinquencies began to increase in 2006-07, investors worried that the top-rated tranches of RMBS and ABS CDOs, previously thought to be almost risk-free, could suffer losses. At first, the concern was limited to “private label” securitizations of subprime mortgages (that is, securitizations not involving the government-sponsored entities (GSEs) Fannie Mae and Freddie Mac). However, defaults on traditional prime mortgages also increased to previously unknown levels, leading to a lack of confidence in the entire mortgage-related securities market, including “agency” securities issued by the GSEs and securities based on prime mortgages.

Most analysts and commentators initially believed the sharp declines in house prices and the increase in defaults would not have large spillover effects on the financial system as a whole.⁶ However, they did not take into account that the AAA-rated tranches of RMBS and ABS CDOs were often used as collateral for short-term repurchase agreements (repo) and asset-backed commercial paper (ABCP), which institutional investors treated as money substitutes.⁷ As soon as investors doubted the value of the underlying collateral, they sought to convert these money substitutes to cash, creating a “run” on repo and ABCP. This forced the issuers of those instruments, principally investment banks and special purpose vehicles created by commercial and investment banks, to attempt to sell RMBS and ABS CDOs, leading to price declines for those securities. Because commercial and investment banks report most of their securities holdings at market value, the price declines led to write-downs of assets at a wide range of financial institutions. The run became systemic.

With this as the basic background, we can look in more detail at some institutional practices that played a role in the crisis.

A. The Originate to Distribute Model

In the textbook description of banking, banks make commercial and mortgage loans that they hold to maturity, financed principally with de-

⁶ See, e.g., INTERNATIONAL MONETARY FUND, GLOBAL FINANCIAL STABILITY REPORT 7 (2007) (“This weakness has been contained to certain portions of the subprime market (and, to a lesser extent, the Alt-A market), and is not likely to pose a serious systemic threat.”)

⁷ Both repo and ABCP are described in more detail below TAN xxx.

posits that can be withdrawn on demand. This maturity transformation makes the bank subject to runs by depositors, a risk reduced since the 1930s by government-provided deposit insurance.⁸ To ameliorate the resulting moral hazard, banks are subject to prudential regulation, most notably risk-based capital requirements.

Post-New Deal thinking considered this model economically sound and normative. However, it was never an accurate description of reality. Until the 1990s, banking in the United States was geographically fragmented, meaning that banks lent principally to local borrowers.⁹ The likelihood that the supply of funds on deposit would just match the demand for commercial and mortgage loans in any given bank was low. Accordingly, specialized non-bank lenders known as mortgage brokers originated mortgage loans and sold them to banks and other investors.¹⁰

A more sophisticated secondary market for mortgages developed in the 1970s. Banks, aided by the GSEs, began to securitize mortgages, selling pools of mortgages to intermediaries who sold securities backed by those mortgages to investors.¹¹ Investors in the securitized mortgages then bore the interest-rate, prepayment, and default risk associated with the underlying loans apart from a small residual interest typically maintained by the originator. Many banks thus moved from an originate-to-hold model to an originate-to-distribute model in which most of their mortgage loans were transferred to special-purpose vehicles that issued and sold securities to investors.

In addition to buying and selling whole mortgages, banks were substantial buyers of securitized mortgages. Indeed, in the early years of securitization, the most common type of transaction was for a bank to transfer a pool of mortgages to a GSE in return for securities backed by the same pool, thus trading a less-liquid for a more-liquid asset.¹²

⁸ See Jonathan R. Macey, *Commercial Banking and Democracy: The Illusive Quest for Deregulation*, 23 *YALE J. ON REG.* 1, 4-6 (2006).

⁹ See CHARLES W. CALOMIRIS AND STEPHEN H. HABER, *FRAGILE BY DESIGN* 167 (2014).

¹⁰ See FRANK J. FABOZZI AND FRANCO MODIGLIANI, *MORTGAGE AND MORTGAGE-BACKED SECURITIES MARKETS* 16-17 (1992).

¹¹ For a comprehensive description of a securitization transaction, see STEVEN L. SCHWARCZ, BRUCE A. MARKELL, AND LISSA LAMKIN BROOME, *SECURITIZATION, STRUCTURED FINANCE AND CAPITAL MARKETS* 1-16 (2004).

¹² See FABOZZI AND MODIGLIANI, *supra* note __, at 23-24 and Table 2-3.

B. Shadow banking

The originate-to-distribute model made it possible for investors rather than depositors to fund residential mortgages. A company can originate mortgages without taking deposits and thereby becoming a bank for federal regulatory purposes.¹³ By the 1970s, a number of non-bank mortgage lenders, such as Countrywide Financial Corp., took funds from institutional lenders rather than depositors and originated mortgages to be securitized rather than held to maturity.

Another important feature of shadow banking is the issuance of deposit-like liabilities by non-bank financial institutions. Deposit insurance has always been limited; currently it covers up to \$250,000.¹⁴ Institutional investors, no less than households, desire temporary, low-risk places to invest short-term cash balances, but their cash balances are considerably larger than the insured amount. Institutional investors often invest these temporary cash balances in short-term IOUs collateralized by AAA-rated debt securities.

This form of short-term lending takes principally two forms. One is the repurchase agreement, or repo, which is economically equivalent to a short-term securitized loan but is structured as a sale of the collateral for cash along with the seller/borrower's agreement to repurchase the security at an agreed price a short time later.¹⁵ The difference between the repurchase and original sale prices provides an implicit interest rate. Credit risk can be even further reduced by overcollateralization, achieved through a "haircut," or the difference between the market value of the collateral and the original sale price.

An alternative structure for achieving a similar risk and maturity profile is asset-backed commercial paper.¹⁶ In this instance, ownership of the collateral is not transferred to the lender but instead kept in a special-purpose entity that holds collateral and issues commercial paper (short-term IOUs). The ABCP is sold at a discount, implying an interest rate, and the difference between the value of the collateral the special purpose entity holds and the amount of ABCP it issues and sells provides overcollateralization just like the haircut in a repo transaction.

¹³ See 12 U.S.C. §1841(c)(1)(B) (2012) (defining "bank" for Bank Holding Company Act purposes generally as an entity that accepts demand deposits and is engaged in the business of making commercial loans).

¹⁴ See 12 U.S.C. §1821(a)(1)(E) (2012).

¹⁵ See GARY B. GORTON, *SLAPPED BY THE INVISIBLE HAND: THE PANIC OF 2007* 5-7 (2010).

¹⁶ For a description of the structure of ABCP, see Viral V. Acharya, Philipp Schnabi, and Gustavo Suarez, *Securitization without risk transfer*, 107 J. FIN. ECON. 515, 519-20 (2013).

Repo and ABCP share two important similarities with demand deposits. They can have maturities as brief as overnight. Typical contractual arrangements make it easy to roll over, or re-extend, the credit. Thus funds can be left on “deposit” with the borrower for an indefinite period yet recalled on short notice when desired. In addition, with AAA-rated collateral and sufficient overcollateralization, the risk of loss can be made extremely low. As the financial crisis showed, however, even if the risk of ultimate loss is very low, that is not a guarantee of liquidity. Repo and ABCP can be subject to runs just like bank deposits. This was the mechanism through which the subprime housing crisis became a systemic financial crisis.

Through originate-to-distribute lending and the creation of deposit-like liabilities, banking activity is disintermediated—that is, not performed by traditional regulated banks. Mortgage originators, not all of which are banks, sell loans to special purpose vehicles that are not banks, which issue securities to investors, some of which are not banks. Meanwhile non-bank entities issue repo and ABCP liabilities backed by RMBS and ABS CDOs. We may observe a series of transactions in which no single entity both takes deposits and is in the business of making loans, and thus none is a bank, but yet the system as a whole resembles traditional banking with deposit-taking at one end and mortgage lending at the other. The term “shadow banking” developed to describe the system as a whole.¹⁷

C. How the Crisis Unfolded in Different Types of Financial Institutions

Gary Gorton provides a careful account of the financial crisis, focusing on its spread from one type of financial instrument to another.¹⁸ Perry Mehrling provides a complementary analysis focusing principally on the activities of the Federal Reserve.¹⁹ In order to assess the importance of deregulation to the crisis, however, it is most useful to look at how the crisis affected specific types of institutions.

The securitization market can be imagined as a pipeline in which mortgages flow from originators to securitization sponsors to underwriters to investors. The flow is not instantaneous. Mortgages and securi-

¹⁷ An accessible description of shadow banking appears in Bryan J. Noeth and Rajdeep Sengupta, *Is Shadow Banking Really Banking?*, THE REGIONAL ECONOMIST 8 (October 2011).

¹⁸ See Gorton, *supra* note ____.

¹⁹ See PERRY MEHLING, *THE NEW LOMBARD STREET: HOW THE FED BECAME THE DEALER OF LAST RESORT* (2011).

ties based on them must be financed while in the pipeline. The financing is typically short-term and can be easily withdrawn by the lenders. In 2007-08, as investor appetite for subprime risk waned, the mortgage pipeline became clogged and lenders began withdrawing credit. Credit dried up first to mortgage originators, whose principal business was mortgage securitization, then to investment banks that held large portfolios of RMBS and CDOs both as underwriters and investors, then to commercial banks and other financial institutions that had large holdings of RMBS and CDOs or had insured those securities.

Nonbank Mortgage Originators

First to experience financial distress, beginning in the second and third quarters of 2007, were specialized mortgage finance companies such as New Century, Countrywide, and American Home Mortgage.²⁰ Each operated on an originate-to-distribute model. They would “warehouse” newly-made mortgage loans until they had assembled a pool to be securitized. The mortgages were meanwhile financed by short-term loans, known as warehouse loans, from banks and other lenders or by the issuance of commercial paper.²¹

As residential real estate prices fell and delinquency rates rose, warehouse lenders began withdrawing credit and securitization sponsors began buying fewer new mortgage pools. The originators therefore found themselves with portfolios of loans they could not finance and borrowings they could not repay. Compounding the problem, these companies also held inventories of mortgage-related securities. American Home Mortgage not only originated and securitized mortgages, but made leveraged investments in the resulting securities, somewhat similar to the GSE swap program described above. These mortgage originators had to finance temporary holdings of warehoused whole mortgages and long-term holdings of RMBSs and ABS CDOs. They failed as soon as lenders withdrew credit.

²⁰ My description of New Century’s, Countrywide’s, and American Home Mortgage’s businesses and financial troubles are taken from their reports filed with the SEC. See New Century Financial Corp., Form 10-Q for the quarter ended Sept. 30, 2006, available at <https://www.sec.gov/Archives/edgar/data/1287286/000089256906001359/a24944e10vq.htm#103>; Countrywide Financial Corp., Form 10-K for the fiscal year ended December 31, 2006, available at https://www.sec.gov/Archives/edgar/data/25191/000110465907015136/a07-4926_110k.htm; American Home Mortgage Investment Corp., Form 10-K for the fiscal year ended December 31, 2006, available at <https://www.sec.gov/Archives/edgar/data/1256536/000119312507044477/d10k.htm>.

²¹ See *id.* at 15.

While these originators are key parts of the shadow banking system, it is worth noting that the same dynamic occurred in a regulated US depository institution, IndyMac Bank FSB, and a UK bank, Northern Rock. Both followed a business model similar to that of New Century or Countrywide, focusing principally on originating and securitizing residential mortgages.

Each failed once lenders stopped making warehouse loans. Northern Rock was unable to repay or refinance short-term loans beginning in August 2007, leading first to central bank liquidity support and ultimately to nationalization.²² IndyMac's regulator, the Office of Thrift Supervision, closed it in July 2008. As an insured institution, it went into FDIC conservatorship.²³ The originate-to-distribute business model and associated vulnerabilities cannot be attributed solely to unregulated shadow banking or to the specifics of the U.S. regulatory system.

Investment banks

Investment banks specialize in securities markets and were involved in the market for mortgage-related securities in multiple ways.²⁴ They were securitization sponsors that held portfolios of mortgages in special-purpose vehicles waiting to be securitized. Some also originated mortgages in order to securitize them. They underwrote RMBS and CDOs that they or other financial institutions had securitized, holding portfolios of these securities awaiting sale to investors. They also invested in the resulting securities, both for their own account and for sponsored hedge funds and other off-balance sheet entities that issued ownership interests and liabilities to outside investors.

Many of these holdings were financed with short-term borrowings. At the time of the crisis, approximately half of the assets on the balance sheets of major investment banks were financed by short-term repo.²⁵ These loans could be and were recalled on short notice when lenders became concerned about the quality of the assets collateralizing them. Major investment banks also acted as prime brokers for hedge funds. In that

²² See *The run on the Rock, Vol. 1*, Report of Treasury Committee, House of Commons, Jan. 24, 2008.

²³ See Federal Deposit Insurance Corporation press release dated July 11, 2008, available at <https://www.fdic.gov/news/news/press/2008/pr08056.html>

²⁴ My description of investment banks' securitization, investment, and financing activities is taken from the SEC filings cited below.

²⁵ See Peter Hördahl and Michael R. King, *Developments in repo markets during the financial turmoil*, BANK FOR INTERNATIONAL SETTLEMENTS Q. REV. 39 (December 2008).

role, they held custody of hedge fund assets and used them as collateral for the investment bank's own borrowing. Hedge funds also "ran" during the crisis by withdrawing prime brokerage assets.²⁶

The "run on repo" described by Gorton and Andrew Metrick began in the second half of 2007 and caused substantial problems for investment banks heavily invested in subprime assets.²⁷ Previously, AA- and AAA-rated mortgage-related securities had been treated as equivalent to Treasury bonds and were accepted as collateral without a haircut. But thereafter the haircuts rose steadily, reducing the availability of credit.²⁸ In March 2008, Bear Stearns could no longer finance its assets and was acquired, with assistance from the New York Fed, by JPMorgan Chase.²⁹

Merrill Lynch was the leading underwriter of CDOs in 2006 and 2007.³⁰ It held large positions in the "super senior", or last-loss, tranches of many of its deals. These were the least risky tranche, but this did not matter once the repo haircuts on subprime assets became too high. In late July 2008, Merrill sold a \$30.6 billion face amount portfolio of super senior CDOs to a hedge fund for \$6.7 billion.³¹ But it was ultimately unable to reduce its assets to a level that it could finance. In September 2008, Bank of America agreed to acquire Merrill Lynch.³²

Lehman Brothers is a slightly more complicated case.³³ It was also a substantial player in the subprime market but had decided to reduce its exposure in 2007. At the same time, however, it made an ultimately fatal

²⁶ See GARY B. GORTON, MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON'T SEE THEM COMING 39 (2012).

²⁷ See Gary Gorton and Andrew Metrick, *Haircuts*, FED. RES. BANK OF ST. LOUIS REV. 513 (Nov/Dec 2010).

²⁸ *Id.*

²⁹ See The Bear Stearns Companies Inc. Form 10-Q for the quarterly period ended Feb. 29, 2008, filed April 14, 2008, p. 47, available at <https://www.sec.gov/Archives/edgar/data/777001/000091412108000345/be12550652-10q.txt>

³⁰ See Matthew Goldstein, "Why Merrill Lynch Got Burned," Bloomberg Businessweek, Oct. 25, 2007, available at <http://www.bloomberg.com/news/articles/2007-10-25/why-merrill-lynch-got-burnedbusinessweek-business-news-stock-market-and-financial-advice>

³¹ See Merrill Lynch & Co., Inc. Form 10-Q for the quarter ended June 27, 2008, at 76, available at <https://www.sec.gov/Archives/edgar/data/65100/000095012308008850/y64172e10vq.htm#127>

³² See Merrill Lynch & Co., Inc. Form 8-K dated September 14, 2008, available at <https://www.sec.gov/Archives/edgar/data/65100/000095012308011048/y71273ke8vk.htm>

³³ The discussion of Lehman's failure is taken from the examiner's report in Lehman's bankruptcy proceeding. See Report of Anton R. Valukas, Examiner, *In re Lehman Brothers Holdings Inc., et al., debtors*, case 08-13555, U.S. Bankruptcy Court, S.D.N.Y., March 11, 2010.

push into commercial real estate investment on the theory that the turmoil in residential real estate would not carry over to commercial real estate.³⁴ Lehman's balance sheet accordingly ballooned to almost \$700 billion, supported by only \$21 billion in common equity. In late 2008, Lehman's repo lenders lost confidence and the firm failed promptly. Lehman's bankruptcy filing in September 2008 ushered in the acute phase of the crisis.

Commercial banks

Commercial banks were in a different position than investment banks. Commercial banks fund part of their assets through insured deposits and retail depositors did not run. However, banks were heavily exposed to residential real estate through direct lending and investment in mortgage-related securities. As investment banks and shadow banks sold mortgage-related assets at bargain-basement prices, commercial banks had to write down mortgage-related assets on their own balance sheets, creating a risk that they would be out of compliance with regulatory capital rules. Banks became wary of lending to one another, leading to a further freeze-up in the financial system.

Citigroup provides a useful illustration of the problems that faced money-center banks in 2007-08. It had a substantial subprime lending unit.³⁵ Like Merrill Lynch, it held a large investment portfolio of super-senior CDO tranches.³⁶ A Citibank subsidiary acted as manager for structured investment vehicles (SIVs) that provided commercial paper facilities for its banking clients. The SIVs would purchase securities, including ABS CDOs, from the clients and issue ABCP. In the "run" on ABCP in late 2007, investors refused to roll over maturing paper. Moody's announced that it would review Citi's SIVs for possible downgrade.³⁷

The SIVs were designed as off-balance sheet entities because Citi, in theory, acted only in a managerial capacity. The ultimate risk of loss on the collateral lay with the ABCP holders. However, those holders as-

³⁴ For a popular account of Lehman's collapse, see LAWRENCE G. MCDONALD AND PATRICK ROBINSON, *A COLOSSAL FAILURE OF COMMON SENSE: THE INSIDE STORY OF THE COLLAPSE OF LEHMAN BROTHERS* (2009).

³⁵ See Financial Crisis Inquiry Commission Report, *supra* note __, at 19.

³⁶ See Citigroup, Inc. Form 10-K for the year ended December 31, 2007, at 48, available at

³⁷ See *Moody's takes rating action on certain Structured Investment Vehicles following its latest review of the sector*, available at https://www.moody.com/research/Moodys-takes-rating-action-on-certain-Structured-Investment-Vehicles-following--PR_145257

sumed (correctly) that in the event of a serious problem with the collateral, Citibank would step in to protect the holders against loss.³⁸ In the event, Citibank established a credit support facility for its managed SIVs to prevent fire sales of their assets.³⁹ This violated the conditions for off-balance sheet accounting treatment, so Citigroup consolidated the assets of those SIVs, including \$49 billion in subprime assets, onto its own balance sheet.⁴⁰ Other major banks were in a similar position.⁴¹ In short, the largest banks and their holding companies had substantial exposure to subprime assets through a variety of banking activities.

Insurance companies

The monoline insurers Ambac Financial Group and MBIA, Inc. insured structured finance bonds as well as municipal bonds, both through traditional insurance products and credit default swaps. Policy holders, unlike depositors, cannot demand their money back when they lose confidence in the company's financial health, so there were no "runs" on the monoline insurers. The companies were, however, subject to adverse action by their regulators and rating agencies. In 2010, the state insurance regulator of Ambac's principal insurance subsidiary decided to take control of a portion of its assets and insurance liabilities for the protection of policy holders, reducing the resources available to the publicly-traded holding company.⁴² Shortly thereafter, the holding company missed a debt payment and filed a bankruptcy petition.

American International Group also insured mortgage-related securities, primarily by writing credit default swaps (CDS).⁴³ Although not required by regulation at that time, parties to over-the-counter derivatives transactions could require their counterparties to post collateral to reduce counterparty credit risk. The largest swap dealers were rated AAA or

³⁸ See Gary B. Gorton and Nicholas S. Souleles, *Special Purpose Vehicles and Securitization*, in *THE RISKS OF FINANCIAL INSTITUTIONS* 549, 551-52 (Mark Carey and René M. Stulz, eds., 2007).

³⁹ See *Citi Commits Support Facility for Citi-Advised SIVs*, press release Dec. 13, 2007, available at <http://www.citigroup.com/citi/news/2007/071213c.htm>

⁴⁰ See Citigroup Inc. Form 10-K, *supra* note __, at 8.

⁴¹ See Nicole Gelinas, *Super SIV to the Rescue?*, *CITY J.*, Nov. 8, 2007.

⁴² See Ambac Financial Group, Form 10-K for the year ended December 31, 2010, at 114-118, available at <http://files.shareholder.com/downloads/AMDA-1TKRMB/2555215070x0x657596/B7D1C5EF-AA19-4DD9-8EB4-FA87B38204CB/Annual2010.PDF>

⁴³ The discussion in this paragraph comes from the Special Inspector General for the Troubled Asset Relief Program (SIGTARP). See SIGTARP Quarterly Report to Congress 63 (July 2009), available at https://www.sig tarp.gov/Quarterly%20Reports/July2009_Quarterly_Report_to_Congress.pdf

guaranteed by a AAA-rated affiliate and were able to persuade counterparties to require no or modest collateral so long as the AAA rating was maintained. When AIG was downgraded and the prices of the CDOs it had insured simultaneously fell, its counterparties were able to “run” by demanding that it post more collateral. This put AIG in the same position as an investment bank financed by repo—its counterparties demanded more collateral, which it could provide only by selling subprime assets into an illiquid market. AIG received assistance from the Troubled Asset Relief Program after the Lehman bankruptcy.

All financial institutions that experienced severe financial distress, then, had three things in common. They had substantial subprime exposure through holdings of whole mortgages, mortgage-related securities, and derivatives products referencing mortgage-related securities. Their positions in those assets were highly leveraged. And either a short-term creditor or regulator was in a position to force them to liquidate those assets at the worst possible time. We are now in a position to ask whether regulatory changes caused these three problems.

II. DEREGULATION AND THE SUBPRIME MARKET

Banks, investment banks, insurance companies, and shadow banks all came to grief in 2007-08 from highly leveraged investments in subprime mortgages and securities and derivatives tied to subprime mortgages. If deregulation cannot explain this behavior, then it cannot explain the financial crisis.

This Part notes that all of the relevant activities—shadow banking, mortgage securitization, bank investment in and underwriting of mortgage-related securities, trading derivatives contracts tied to mortgage-related securities, and high financial leverage—were permissible for decades prior to the crisis. I show that the rise of the subprime market was not the consequence of deregulation in general, or of the partial repeal of GSA and enactment of the CFMA in particular. Critics have also identified the SEC’s 2004 adoption of a Consolidated Supervised Entity Program (CSE) as a deregulatory change that increased investment banking leverage.⁴⁴ I demonstrate that the CSE program did not facilitate increased investment bank leverage either in principle or in practice.

⁴⁴ See Securities and Exchange Commission, *Alternative Net Capital Requirements for Broker-Dealers That Are Part of Consolidated Supervised Entities*, 69. FED. REG. 34428 (2004).

A. Bank investment in securitized mortgages

Commercial banks and their holding companies could and did invest for their own account in mortgage-backed securities (MBS) and investment grade collateralized debt obligations (CDOs) for decades before the crisis.⁴⁵ GLBA did not change their ability to do so.

The National Bank Act of 1864 gave national banks enumerated powers as well as incidental powers necessary to carry out the business of banking.⁴⁶ Those incidental powers were understood to include investment, and even underwriting and dealing, in debt securities, although there was disagreement about banks' authority to buy and sell equities.⁴⁷ In 1927, the McFadden Act added a specific definition of "investment securities" that banks could buy and sell for their own account, including "marketable obligations evidencing indebtedness ... in the form of bonds, notes and/or debentures ... under such further definition ... as may by regulation be prescribed by the Comptroller of the Currency."⁴⁸ The definition was added to the National Bank Act's enumerated powers section, codified at 12 U.S.C. §24 (seventh), which for brevity I will call the "Investment Securities Provision."

The banking crisis of 1932-33 led to enactment of GSA, comprising sections 16, 20, 21 and 32 of the Banking Act of 1933.⁴⁹ Only Section 16 deals directly with commercial banks' investment powers. It amended the Investment Securities Provision by explicitly prohibiting banks from investing in equities. It also added specific prohibitions on underwriting and dealing in securities with the exception of full faith and credit federal, state and local bonds. Section 16 continued to permit a national bank to "purchase for its own account investment securities under such limitations and restrictions as the Comptroller of the Currency may prescribe." Following enactment of Section 16, government bonds that a bank could both own and underwrite became known as "bank-

⁴⁵ A useful guide to way GSA and GLBA regulated bank securities activities is a paper prepared by the Congressional Research Service: David H. Carpenter and M. Maureen Murphy, "Permissible Securities Activities of Commercial Banks Under the Glass-Steagall Act (GSA) and the Gramm-Leach-Bliley Act (GLBA)," Congressional Research Service Report No. 7-5700 (April 12, 2010).

⁴⁶ See Act of June 8, 1864, 13 Stat. 99, codified as amended at 12 U.S.C. §24 (seventh).

⁴⁷ See George G. Kaufman and Larry R. Mote, *Commercial Bank Securities Activities: What Really Happened in 1902*, 24 J. Money, Credit, & Banking 370 (1992).

⁴⁸ See 12 U.S.C. §24(Seventh) (1926 and Supp. VI 1932).

⁴⁹ A useful description of GSA and its legislative history appears in Edward J. Kelly III, "Legislative History of the Glass-Steagall Act," in Ingo Walter, ed., *Deregulating Wall Street: Commercial Bank Penetration of the Corporate Securities Market* (1985).

eligible,” and those that a bank could own but not underwrite became known as “bank-ineligible” securities.

Separately, the Banking Act subjected state member banks (that is, state-chartered banks that are members of the Federal Reserve system) to the restrictions newly added to the Investment Securities Provision.⁵⁰ Thus, as of 1933, a national bank or state member bank could not underwrite or deal in corporate bonds, but could invest in them for its own account to the extent permitted by the Office of the Comptroller of the Currency (OCC). It could also underwrite, deal, and invest in municipal bonds and other government securities.

Agency RMBS and CDOs were expressly included in the bank-eligible bucket, and private-label RMBS and CDOs in the bank-ineligible bucket, shortly after they came on the scene. The infrastructure for securitization began with the creation of the Federal Housing Administration in the National Housing Act of 1934.⁵¹ The FHA insured certain residential mortgages as an inducement for banks to make mortgage loans. A 1938 amendment created Fannie Mae, a then government-owned organization designed to purchase FHA- and Veterans Administration-insured loans from banks.⁵²

A 1964 statute authorized Fannie Mae to create investment pools of insured mortgages in a trust or similar device and simultaneously amended the Investment Securities Provision to include “participations or other instruments of or issued by the Federal National Mortgage Association” in the bank-eligible category.⁵³ The Housing and Urban Development Act of 1968, which made Fannie Mae a private company, also gave it the power to issue securities collateralized by mortgages,⁵⁴ putting in place the basic tools for securitization. The same statute created Ginnie Mae, a government agency that would specialize in securitizing mortgages insured by federal agencies, while Fannie Mae and Freddie Mac, the latter created in 1970, would henceforth purchase and securitize conventional, or non-federally-insured, mortgages. These securitizations were added to the Investment Securities Provision’s list of bank-eligible securities.⁵⁵

⁵⁰ See National Bank Act of 1933, *supra* note __, §5(c), 48 Stat. 165, codified as amended at 12 U.S.C. §335 (2012).

⁵¹ Pub. L. No. 73-479, 48 Stat. 874 (June 28, 1934).

⁵² Pub. L. No. 75-424, 52 Stat. 8 (February 3, 1938).

⁵³ Pub. L. No. 88-560, Title VII, 78 Stat. 800 (Sept. 2, 1964).

⁵⁴ Pub. L. No. __, codified as amended at 12 U.S.C. §1719(d).

⁵⁵ See 12 U.S.C. §24 (seventh) (1976).

Lacking a specific statutory provision, private-label securitizations would initially have been analyzed under the OCC's investment securities regulations. These gave general guidance on permissible securities investments as well as a procedure for requesting an eligibility ruling on specific securities.⁵⁶ Banks were not permitted to invest in securities that were "predominantly speculative in nature."⁵⁷ The regulations permitted a bank to invest in non-government debt securities if it made a "prudent banking judgment" that the issuer could perform its obligations.⁵⁸ Based on the OCC's generally favorable approach to securities collateralized by residential mortgages, it is reasonable to assume that private-label securitizations with appropriate credit protection would have been eligible for purchase by national and state member banks if the bank, in the exercise of prudent banking judgment, deemed the security low-risk.⁵⁹

The Secondary Mortgage Market Enhancement Act of 1984 removed any doubt on that score. That statute defined a "mortgage related security" to include residential mortgage pass-through securities and debt securities collateralized by residential mortgages or mortgage-backed securities, so long as the security was rated in one of the two highest categories by a nationally recognized statistical rating organization.⁶⁰ The Investment Securities Provision was simultaneously amended to permit banks to invest in (but not underwrite) mortgage related securities as so defined, subject to limits the OCC might prescribe by regulation. The statute in effect substituted the judgment of rating agencies for the prudent banking judgment of individual banks called for by the OCC's regulations.

Thus, when the concept of a mortgage pass-through security was devised around 1970, banks had clear authority to sell mortgages (as they had done for decades), to securitize them with Ginnie Mae's assistance and underwrite the resulting securities, and to invest in, underwrite, and deal in mortgage-backed securities issued by Fannie Mae and Freddie

⁵⁶ See 12 C.F.R. §§ 1.1-1.12 (1970). The Comptroller summarized its regulations in the Comptroller's Handbook. See Comptroller of the Currency, *Investment Securities, Comptroller's Handbook Section 203*, March 1990.

⁵⁷ Id. § 1.3(b)

⁵⁸ 12 C.F.R. § 1.5 (1970).

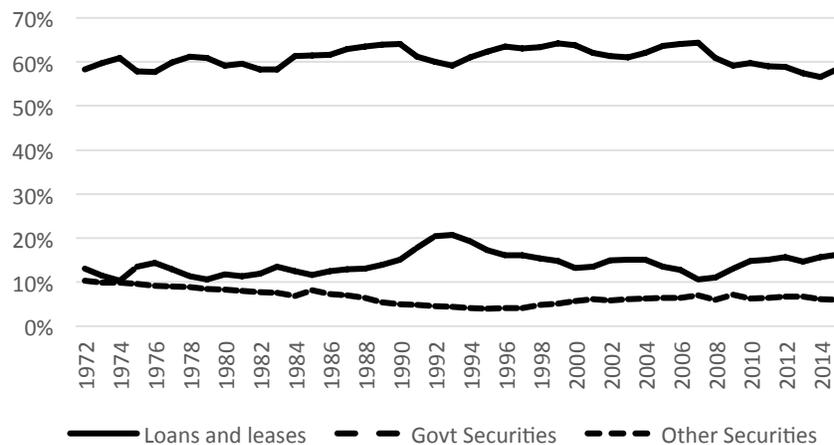
⁵⁹ A few versions of the Comptroller's regulations included a compendium of rulings on the eligibility of various securities. See id. §§1.105-1.245.

⁶⁰ See 15 U.S.C. 78c(a)(41) (2012). The Dodd-Frank Act removed the reference to ratings and replaced it with a requirement that the security "meets standards of credit-worthiness as established by the [Securities and Exchange] Commission."

Mac. Prior to 1984, a fair reading of the OCC's regulations would have permitted banks to buy investment-grade private-label securitizations; from 1984 on that permission was provided explicitly by statute.

None of this changed in 1999. GLBA did not repeal Section 16 of GSA. Commercial banks accordingly retained the same powers and limitations as before with respect to securities investments.⁶¹ That GLBA did not affect bank securities investments is clear from Figure 1, which plots three key categories of bank assets—loans and leases, government securities, and non-government securities—as a percent of total assets over time for the universe of domestic commercial banks. The mix shows no sharp change after enactment of GLBA in 1999. Bank investment in non-government securities was actually higher in the early 1970s than in the early to mid-2000s.

Figure 1: Selected assets of commercial banks, % of total



Source: Federal Reserve⁶²

⁶¹ GLBA did add certain additional types of municipal bonds to the list of bank-eligible securities in the Investment Securities Provision. See GLBA §151, 113 Stat. 1384, codified at 12 U.S.C. §24 (seventh) (2012). Bank holding companies had already gained the authority to underwrite and deal in those securities through a securities affiliate. See below at ____.

⁶² See Board of Governors of the Federal Reserve System, Release H.8, Assets and Liabilities of Commercial Banks in the United States (not seasonally adjusted), available at <http://www.federalreserve.gov/releases/h8/>.

B. Bank underwriting of mortgage-related securities

GSA permitted banks to underwrite only bank-eligible securities, including municipal securities. For decades before GLBA, money-center banks were among the nation's leading underwriters of municipal bonds.⁶³ They also acted as placement agents for private placements of other securities, including bank-ineligible securities. The Board of Governors of the Federal Reserve System (the "Board") and the D.C. Circuit concluded that private placements are agency and not principal transactions and therefore permitted to banks under GSA §16.⁶⁴

Most banks are owned by a holding company. Section 20 of GSA made it illegal for a bank to be affiliated with any organization "engaged principally" in the normal investment banking activities of securities underwriting and distribution.⁶⁵ This is what commentators mean when they say that GSA "separated" investment and commercial banking—it prohibited them from taking place under the same holding company umbrella.⁶⁶ Nevertheless, the "engaged principally" language gave bank holding companies greater flexibility than banks themselves, which were subject to a blanket prohibition on underwriting or dealing in bank-ineligible securities.

The Bank Holding Company Act of 1956 also limits the activities of bank affiliates. As amended by the Bank Holding Company Act Amendments of 1970, the statute allows bank holding companies to own banks and companies engaged in activities that, in the judgment of the Board, are "so closely related to banking ... as to be a proper incident thereto."⁶⁷

The Board's Regulation Y provided a procedure for a bank holding company to request a determination that a particular activity is closely related to banking.⁶⁸ Over time, the Board added to the regulation a list of activities that it had already concluded were permissible for bank

⁶³ See, e.g., Evelyn Kondratuk, *A Rocky Road for Municipals During 1980's First Half*, 46 INV. DEALERS' DIGEST 4, 6 (1980) (Morgan Guaranty Trust Co., Continental Illinois National Bank, Bankers Trust Co., Citibank, N.A., First National Bank of Chicago, Harris Trust & Savings Bank, and Northern Trust Co. included among top 25 muni bond underwriters).

⁶⁴ See *Securities Industry Assn. v. Board of Governors*, 807 F.2d 1052 (D.C. Cir. 1986), cert. denied. 483 U.S. 1005 (1987).

⁶⁵ See National Bank Act of 1933, *supra* note __, §20, 48 Stat. 188 (repealed by GLB).

⁶⁶ Meanwhile, §21 prohibited investment banks from taking deposits. See *id.* §21. The fourth provision, §32, was designed to prevent evasion of §20 by prohibiting director overlaps between banks and companies engaged principally in underwriting or dealing.

⁶⁷ See 12 U.S.C. §1843(c)(8) (1970).

⁶⁸ See 12 C.F.R. §222.4 (1970).

holding companies and could therefore be undertaken with only prior notification to, rather than prior approval from, the Board.⁶⁹

One of those permissible activities was to establish a securities affiliate to underwrite and deal in bank-eligible securities.⁷⁰ Accordingly, some money center banks moved their municipal bond and other bank-eligible investment banking activities out of the bank and into investment banking subsidiaries of their holding companies.⁷¹

In 1985, several bank holding companies sought permission for their existing investment banking subsidiaries to underwrite certain bank-ineligible debt securities, including municipal revenue bonds and private-label mortgage-related securities.⁷² In order to permit it, the Board had to conclude that underwriting bank-ineligible debt was “closely related to banking” as required by the Bank Holding Company Act, but that the affiliate would not be “engaged principally” in the distribution of securities in violation of §20 of GSA.

In a series of rulings beginning in early 1987, the Board concluded that both conditions were met so long as underwriting bank-ineligible securities did not account for more than 10% of the affiliate’s gross revenues.⁷³ The limitation did not pose a problem for the largest bank securities affiliates. Citicorp Securities, for example, already held 12th place in nonconvertible debt underwriting by virtue of its underwriting of bank-eligible securities, giving it a substantial revenue base against which to measure its newly-authorized underwriting of bank-ineligible securities.⁷⁴

The investment banking industry tried to thwart the Board’s decision. As part of the Competitive Equality Banking Act of 1987, Congress enacted a one-year moratorium preventing bank securities affiliates from

⁶⁹ See, e.g., 12 C.F.R. §224.4 (1980).

⁷⁰ Id. §222.25.

⁷¹ See *Citicorp Asks Fed to Let It Underwrite Corporate Debt*, WALL ST. J., Dec. 28, 1984, at 2.

⁷² See *Citicorp Proposal on Underwriting is Scaled Down*, WALL ST. J., Mar. 28, 1985, at 4.

⁷³ See *Orders Issued Under Section 4 of the Bank Holding Company Act, Citicorp, J.P. Morgan & Co. Incorporated, and Bankers Trust New York Corporation*, 73 FED. RES. BULL. 473 (1987); *Orders Issued Under Section 4 of the Bank Holding Company Act, Chase Manhattan Corp., Chemical New York Corp., Manufacturers Hanover Corp., and Security Pacific Corp.*, 73 FED. RES. BULL. 607 (1987).

⁷⁴ See *Domestic Corporate Financing 1987*, 54 Investment Dealers’ Digest 21 (1988).

exercising the new powers.⁷⁵ Meanwhile, the Securities Industry Association pursued ultimately unsuccessful litigation against the Board.⁷⁶

In 1988 the litigation concluded, the moratorium ended, and bank securities affiliates began underwriting bank-ineligible securities. These subsidiaries became known as “Section 20” subsidiaries. Subsequently, the Board broadened the permissible activities of Section 20 subsidiaries to include underwriting corporate debt and equity securities. It also permitted underwriting of bank-ineligible securities to account for up to 25% of a Section 20 affiliate’s gross revenues.⁷⁷

GLBA repealed §§20 and 32 of GSA, giving Congress’s blessing to Section 20 subsidiaries and relieving them of the 25% revenue cap.⁷⁸ The statute also took away the Board’s authority to add further to the list of activities “closely related” to banking.⁷⁹ As the discussion above makes clear, bank holding company subsidiaries were already major players in the investment banking business before GLBA. Indeed, J.P. Morgan, Chase Manhattan Corp., and Bank of America Corp. were all among the top 15 underwriters for *all* domestic new issues of securities in 1998, the year before GLBA.⁸⁰ With respect to bank affiliates’ underwriting activities, GLBA ratified facts on the ground.

More broadly, there is little reason to think that the Board’s 1987 decision to permit Section 20 affiliates to underwrite bank-ineligible securities played any significant role in the financial crisis. It is first important to note that the conventional story, in which banks got into investment banking as a means of ramping up risk, has it entirely backward. As discussed in more detail in Part III, it was conventional banking that got much riskier in the unstable interest rate environment of the 1970s and 1980s. Banks turned to fee-generating securities activities as a way to *reduce* the overall riskiness of their activities.

Indeed, the conventional banking activities of the largest commercial banks, not their underwriting activities, were the main cause of financial distress. By the mid-2000s, the largest commercial banks were so heavily invested in subprime assets that their underwriting activities merely added insult to injury.

⁷⁵ Competitive Equality Banking Act of 1987, Pub. L. No. 100-86, §201(b), 101 Stat. 581 (1987).

⁷⁶ See *Securities Industry Assn. v. Bd. of Governors*, 839 F.2d 47 (2d Cir. 1988), cert. denied, 486 U.S. 1059 (1988); *Securities Industry Assn. v. Bd. of Governors*, 900 F.2d 360 (1990).

⁷⁷ See Carpenter and Murphy, *supra* note __, at 14

⁷⁸ See Gramm-Leach-Bliley Act, Pub. L. No. 106-102, §101, 113 Stat. 1341 (Nov. 12, 1999).

⁷⁹ See *id.* §102(a).

⁸⁰ See *Domestic Rankings*, 65 Investment Dealer’ Digest 29 (1999)

Citigroup and its banking subsidiary, Citibank, provide a straightforward example. Citigroup's troubles stemmed principally from Citibank's investments in subprime loans and AAA-rated CDOs based on those loans—both traditional banking activities permitted by GSA. Citibank's allowance for loan losses increased from \$5.2 billion at the end of 2006 to \$18.2 billion at the end of 2008, reflecting expected losses on real estate loans.⁸¹ During the same period, the bank accumulated \$9 billion in unrealized losses on holdings of investment securities. The exit of investors from the bank's sponsored ABCP program substantially increased its exposure to subprime assets at a time when those assets were illiquid.

None of these problems were consequences of having an investment banking affiliate. The bank itself put the parent, Citigroup, in a precarious position. The bank's regulator, the OCC, downgraded it to a "less than satisfactory" rating in early 2008.⁸²

In short, the pattern that all but guaranteed trouble during the crisis—heavy subprime exposure, substantial leverage, and the issuance of money substitutes—is not a function of combining commercial banking and securities underwriting. Banks' direct investments in subprime loans and securities based on subprime loans were the proximate cause of their problems, and those were permissible with or without GSA.

C. OTC derivatives

In the years before the crisis, over-the-counter (OTC) derivatives were not regulated as futures contracts. As a result, most of them were not centrally cleared (that is, there was no institution guaranteeing each counterparty's performance to the other). When the financial health of a significant OTC derivatives dealer, AIG, deteriorated, its counterparties faced potential losses. The FCIC accordingly mentions the CFMA as a contributing factor to the crisis.⁸³ Lynn Stout goes farther, arguing that the CFMA was the single most important cause of the crisis, contending that derivatives products dramatically magnified financial institutions' losses from mortgage defaults.⁸⁴

⁸¹ Citigroup Forms 10-K for years ended December 31, 2006 and 2008.

⁸² See Financial Crisis Inquiry Commission Report, *supra* note __, at 302.

⁸³ See *id.* at 45-51.

⁸⁴ See Lynn A. Stout, *Derivatives and the Legal Origin of the 2008 Credit Crisis*, 1 HARV. BUS. L. REV. 1 (2011).

These arguments do not take account of the regulatory system that preceded CFMA and overstate the connection between credit default swaps (CDS), a category of OTC derivatives, and the crisis.

Imagine two banks, A and B. A owns a \$1 million, 10-year fixed-rate loan and B owns a \$1 million, 10-year floating-rate loan. However, A would prefer a floating payment stream and B would prefer a fixed stream. Bank A could sell its loan on the secondary market and buy a floating-rate loan; bank B could take the opposite side of the trade. So far, this is an everyday banking activity of no novelty or interest.

The innovation behind interest rate swaps is dispensing with the actual transfer of the loans and instead transferring only the interest payments, calculated on a “notional” principal amount set by contract.⁸⁵ This reduces transaction costs but subjects each bank to counterparty credit risk. This risk, like the risk of bank lending generally, can be managed by requiring collateral. The same principle is at work in a currency swap, although there the parties trade foreign exchange rather than underlying loans.

The similarity between a swap, on the one hand, and an exchange of loans, on the other, is important. Commentators sometimes date the beginning of the swaps market to the World Bank’s interest rate swap program in 1981.⁸⁶ However, a prototype of the currency swap, in which companies lent to each other’s foreign subsidiaries in different currencies, was developed much earlier, in the wake of the Bretton Woods agreement. The objective was to manage exchange rate risk while not violating exchange controls.⁸⁷ The more general, and important, point is that swap contracts are substitutes for higher-cost transactions or sequences of transactions in other financial instruments.

In the era before Dodd-Frank’s rewriting of the laws relating to swaps, the question naturally arose whether they were a futures contract subject to the jurisdiction of the Commodity Futures Trading Commission (CFTC), a security subject to the SEC’s jurisdiction, or a normal commercial contract not subject to any specialized regulatory scheme.⁸⁸

⁸⁵ For an accessible explanation of interest rate and currency swaps and some of the common variants, see Roberta Romano, *A Thumbnail Sketch of Derivative Securities and Their Regulation*, 55 MD. L. REV. 1, 46-51 (1996).

⁸⁶ See, e.g., Thayer Watkins’ web site, <http://www.sjsu.edu/faculty/watkins/swaps.htm>

⁸⁷ See Mehrling, *supra* note __, at 72-79; Romano, *supra* note __, at 49.

⁸⁸ For a detailed discussion of the political economy of the regulatory competition over derivatives products, see Roberta Romano, *The Political Dynamics of Derivative Securities Regulation*, 14 YALE J. ON REG. 279, 353-380 (1997).

It is not likely that a court would have found a “plain vanilla” interest rate or currency swap to be a security. It does not fit the *Howey* test for an “investment contract.”⁸⁹ Rather than one party providing capital and the other providing management, each party agrees to a schedule of payments determined by external events and each is exposed to the other’s credit. The contract is therefore not a “common enterprise” in which investors are “led to expect profits solely from the efforts of” another.⁹⁰

Swap contracts are also not structured as notes or evidences of indebtedness. Because they are not used for raising capital, not marketed to the general public, and not perceived by their normal users as securities, they would not likely have been found to be debt securities.⁹¹

While the question is more complex, the most plausible reading of the Commodity Exchange Act before Dodd-Frank is that a plain vanilla swap is not a futures contract. The question could have arisen only after enactment of the Commodity Futures Trading Commission Act of 1974.⁹² Prior to 1974, the Commodity Exchange Act applied only to futures in enumerated agricultural commodities.⁹³ The basic scheme of the statute was to require that any contract “for future delivery” in the covered commodities take place on an exchange regulated by the Secretary of Agriculture.⁹⁴

However, in light of the commodity exchanges’ desire to get into the business of financial futures, the 1974 amendments broadened the statute’s scope to include futures contracts in “all services, rights, and interests in which contracts for future delivery are presently or in the future dealt in”.⁹⁵ The statute created a new independent agency, the CFTC, to oversee the newly-expanded regulatory system.

⁸⁹ See *Securities and Exchange Commission v. W.J. Howey Co.*, 328 U.S. 293 (1946) (interpreting the definition of “security” in 15 U.S.C. §77b(a)(1) (2012), previously 15 U.S.C. §77b(1)).

⁹⁰ See *id.* at 299. See also *Procter & Gamble Co. v. Bankers Trust Co.*, 925 F. Supp. 1270 (S.D. Ohio 1996) (applying *Howey* and finding an interest rate swap contract not an “investment contract”).

⁹¹ See *Reves v. Ernst & Young*, 494 U.S. 56 (1990); see also *Banco Espanol de Credito v. Security Pac. Nat’l Bank*, 973 F.2d 51 (2d Cir. 1992), *cert denied*, 509 U.S. 903 (1993) (applying *Reves* to loan participation agreements between banks); *Procter & Gamble*, *supra* note __ (finding an interest rate swap to be neither a “note” nor an “evidence of indebtedness”).

⁹² Commodity Futures Trading Commission Act of 1974, Pub. L. No. 93-463, 88 Stat. 1389, codified as amended at 7 U.S.C. §§1-27f et seq. (2012).

⁹³ See 7 U.S.C. §2(a) (1970).

⁹⁴ See 7 U.S.C. §6 (1970).

⁹⁵ See 7 U.S.C. §1a(9) (2012).

The statute also included the so-called “Treasury Amendment” regarding foreign exchange, government securities, mortgages, and certain other instruments typically dealt in by banks. As to those instruments, the Treasury Amendment flipped the normal presumption that off-exchange futures trading was illegal. Instead, it provided that the Act would apply to these instruments only to the extent that they were the subject of an exchange-traded contract.⁹⁶

The Treasury Amendment seems clearly to have put plain-vanilla currency swaps out of the CFTC’s reach. More broadly, the statute drew a distinction between futures and “forward” contracts, commercial arrangements calling for the deferred delivery of and payment for a cash commodity.⁹⁷ In deciding whether a particular contract is a forward or a futures contract, the CFTC and courts emphasized whether a contract was standardized or contained individually negotiated non-price terms, whether it was limited to industry participants or marketed to the general public, and whether the parties anticipated physical delivery of the commodity.⁹⁸ These factors argued against treating interest rate swaps as futures contracts.

For financial institutions trying to decide whether they are violating a statute by trading a new type of instrument, however, the central question is not what the ultimate resolution would be if litigated, but what position the administering agency will take. Initially, neither the SEC nor the CFTC chose to assert jurisdiction over interest rate and currency swaps.

But the swaps market did not remain limited to interest rate and currency swaps. As transactions gained in complexity, some began to condition payments on the movement of a commodity, security, or index. In so doing, they came closer to the line separating swaps from securities or commodity futures contracts. However, the regulatory implications remained limited so long as these instruments were non-standardized and negotiated individually between financial and commercial institutions. As such, they fell within exemptions from the registration requirements of the Securities Act of 1933 and continued to resemble forwards more than futures.⁹⁹ Thus, by the late 1980s, the OTC derivatives

⁹⁶ See *id.*

⁹⁷ See 7 U.S.C. §1a(27) (2012)

⁹⁸ See, e.g., *CFTC v. Co Petro Marketing Group*, 680 F.2d 573 (9th Cir. 1982); PHILIP MCBRIDE JOHNSON AND THOMAS LEE HAZEN, *DERIVATIVES REGULATION* 30-31 (2004) (CFTC interpretation).

⁹⁹ See Securities Act §4(a)(2), 15 U.S.C. §77d(a)(2) (2012).

market was coterminous with individually negotiated contracts entered into using industry-standard swap documentation.

The CFTC held open the possibility of asserting regulatory jurisdiction in the unlikely event that financial institutions began marketing swaps to retail investors. In 1989, the CFTC adopted a policy statement indicating that swap transactions that were non-standardized, not centrally cleared, and not marketed to the public would not be considered futures contracts subject to CFTC regulation.¹⁰⁰ This was a safe harbor (a statement of enforcement intent) rather than an exemption because the CFTC at the time lacked authority to exempt a futures contract from the exchange-trading requirement. The CFTC gained that authority in the Futures Trading Practices Act of 1992 and promptly adopted a regulation exempting the swap market in its then-current form.¹⁰¹ The regulation exempted any non-standardized swap entered into between “eligible swap participants,” a definition including only sophisticated entities.¹⁰²

Both the SEC and the CFTC considered any swap transaction meeting the statutory definition of a security or a contract for future delivery to be within the scope of their respective antifraud provisions. The SEC brought an enforcement action against a broker-dealer and its associated person for making misleading statements in connection with a swap that was in substance an option on a security.¹⁰³ The CFTC swap regulation did not exempt swaps from the general antifraud provisions of the Commodity Exchange Act.¹⁰⁴ However, it remained doubtful that even a commodity swap as typically structured would be considered a futures contract, and accordingly the threat of applying the CEA’s antifraud provisions was probably more theoretical than real.

This is the status quo the CFMA largely ratified. It provided “legal certainty” to the question whether swaps were securities or futures con-

¹⁰⁰ See Commodity Futures Trading Commission, *Policy Statement Concerning Swap Transactions*, 54 FED. REG. 30694 (1989).

¹⁰¹ See 7 U.S.C. §6(a), (c) (2012).

¹⁰² See 17 C.F.R. §35.1-2 (1993).

¹⁰³ See *In the Matter of Mitchell A. Vazquez*, Sec. Act Rel. 7269 (Feb. 29, 1996) (finding respondent to have violated antifraud provisions of federal securities laws with respect to certain options structured as swaps). The conclusion that a particular swap was a security would also subject anyone acting as a broker or dealer in the transactions to registration under the Securities Exchange Act, see 15 U.S.C. §78o(a) (2012). The SEC exempted persons acting as brokers or dealers in OTC options constituting securities from broker-dealer registration. See Sec. Exchange Act Rel. 35135 (December 22, 1994).

¹⁰⁴ See 17 C.F.R. §35.2 (1999) (exempting certain swaps from all provisions of the Commodity Exchange Act except for, among others, §§4b and 4o, 7 U.S.C. §§6b, 6o (1994)).

tracts.¹⁰⁵ The statute defined a class of institutions and high net worth individuals as “eligible contract participants”¹⁰⁶ and excluded non-standardized swaps between eligible contract participants from coverage under the CEA, including its antifraud provisions.¹⁰⁷ It similarly excluded swaps from the definition of “security” in the Securities Act and Securities Exchange Act.¹⁰⁸ However, it subjected a subclass of swaps to the SEC’s principal antifraud rule. The statute defined a “security-based swap” as one whose payments were based on the “price, yield, value, or volatility of any security or group or index of securities.”¹⁰⁹ Security-based swaps were made expressly subject to the anti-manipulation and anti-fraud provisions of the Securities Exchange Act.¹¹⁰

Credit derivatives entered the market in 1994. A standard credit default swap (CDS) operates like an insurance contract. In the simplest version, a “buyer” of credit protection agrees to make periodic payments to the “seller” over the life of the swap. In return, the seller is liable for the difference between the face value and the realized value of a reference bond in the event of a default during the life of the swap.¹¹¹

Consider a commercial or investment banker structuring an early credit default swap in the mid-1990s. He or she might have asked outside counsel a series of questions and received answers based on pre-CFMA statutory, regulatory, and judge-made law: Will this transaction be subject to registration under the Securities Act? (No.) Will the swap be subject to the securities registration requirements of Section 12 of the Securities Exchange Act? (No.) Will arranging the swap subject the firm to registration as a broker-dealer? (No.) Must the transaction take place on a regulated futures exchange? (No.) Will an intentional or reckless misstatement in connection with the transaction subject the maker to antifraud liability under Rule 10b-5? (Yes.) Under section 4b of the Commodity Exchange Act? (probably not). After enactment of the CFMA, the only change is that the final “probably not” becomes a “no”.

¹⁰⁵ See CFMA Title III, “Legal Certainty for Swap Agreements,” 114 Stat. 2763A-449 (2000).

¹⁰⁶ See CFMA §101(4), codified as amended at 7 U.S.C. §1a(18) (2012).

¹⁰⁷ See CFMA §105(b), 114 Stat. 2763A-379 (2000). This provision was amended substantially by Dodd-Frank. See 7 U.S.C. §2(d) (2012).

¹⁰⁸ See CFMA §§302-303, codified as amended at 15 U.S.C. §§77b-1, 78c-1 (2012).

¹⁰⁹ See CFMA §301, 114 Stat. 2763A-451 (adding a new §206B to GLBA).

¹¹⁰ See CFMA §302(b), 114 Stat. 2763A-453, codified as amended at 15 U.S.C. §§78i(a)(2)-(5), 78j (2012).

¹¹¹ See ANTULIO N. BOMFIM, UNDERSTANDING CREDIT DERIVATIVES AND RELATED INSTRUMENTS 6 (2005).

The argument that the CFMA was “deregulatory” turns on the possibility that the CFTC would have tightened its exemption absent the statute. In the late 1990s, the CFTC began to raise questions about the regulation of the swaps market. It issued a concept release suggesting that it might reassess its treatment of OTC derivatives and requesting comment on various possible changes.¹¹²

The CFMA largely put the OTC derivatives market out of the CFTC’s reach. However, there is little reason to assume that the CFTC’s review would have regulated OTC derivatives in such a way as to prevent the growth of the CDS market. The concept release itself did not suggest that a radical overhaul was in the works. A more realistic argument, offered by Steven Gjerstad and Vernon Smith, is that the CFTC proposed to gather more information about OTC derivatives dealers that might have given regulators sufficient information about the buildup of subprime risk.¹¹³ The argument seems strained, particularly coming in a paper that notes the myriad failures of bank regulators to understand the risks that banks were taking in the years before the crisis.

But let us indulge the assumption that absent CFMA, the CFTC would have regulated the CDS market out of existence. It is unlikely that this would have prevented or significantly altered the financial crisis.

Stout’s argument to the contrary proceeds largely by process of elimination. As she notes, there were about \$1.3 trillion in subprime loans outstanding in 2007.¹¹⁴ If we assume that 40% of these defaulted and the lenders realized 50% of the loan amount on foreclosure, the aggregate loss would be \$260 billion.¹¹⁵ The financial system has absorbed much larger losses in the past; in the dot-com crash, for example, the value of New York Stock Exchange and NASDAQ stocks declined by about \$9 trillion.

Why did a much smaller aggregate loss drain liquidity almost entirely from the financial system in 2007-08? Stout argues the only way to make sense of these facts is that OTC derivatives multiplied the losses many fold, noting that the outstanding notional value of OTC derivatives

¹¹² See CFTC, *Over the Counter Derivatives*, available at <http://www.cftc.gov/opa/press98/opamntn.htm>

¹¹³ See Steven Gjerstad and Vernon L. Smith, *Monetary Policy, Credit Extension, and Housing Bubbles, 2008 and 1929*, in FRIEDMAN, *supra* note __, at 107, 1__.

¹¹⁴ Stout, *supra* note __, at 28.

¹¹⁵ The 40% default rate assumption is based on the performance of subprime loans originated in 2007, the worst-performing group, as of 2010. See Gene Amromin and Anna L. Paulson, *Default rates on prime and subprime mortgages: differences and similarities 2*, FED. RES. BANK OF CHICAGO PROFITWISE (Sept. 2010).

was in the range of \$670 trillion.¹¹⁶ Of that amount, approximately \$26 trillion consisted of CDS.¹¹⁷

The argument overlooks two important issues. The aggregate notional amount of CDS outstanding was eye-popping, but it is a gross number. The OTC derivatives market is a dealer market; when a buyer and seller of credit protection find each other, they do so through the intermediation of one, or more typically several, dealers. In Stout's terminology, dealers are "speculators" because they do not necessarily own the underlying bond. But it is an odd kind of speculation because their objective is to have a *net* exposure of zero at all times. For every CDS they sell, they intend to find another market participant from which to purchase. They intend to make money from fees and bid-ask spreads, not from correctly guessing price movements.

Matters would be different had CDS been traded on exchanges, as critics argued they should be and as Dodd-Frank with some exceptions requires.¹¹⁸ An exchange is not a dealer market; end-users meet through the facilities of the exchange and a clearinghouse serves as the counterparty to each.

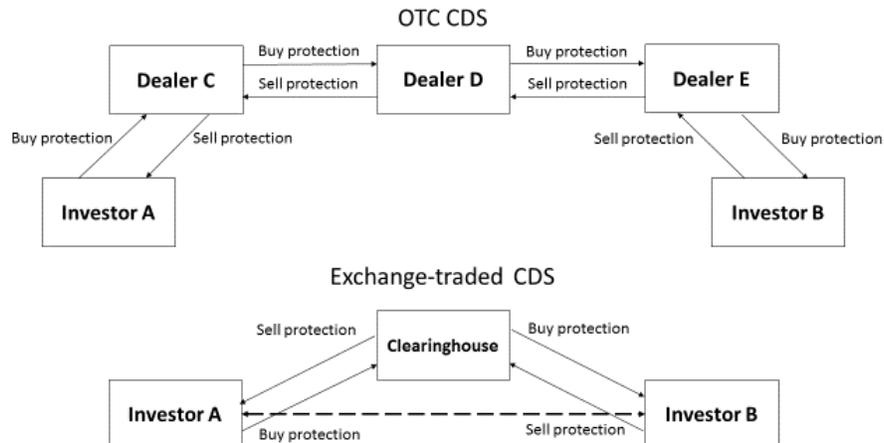
Figure 2 illustrates the difference. Suppose Investor A wishes to buy credit protection in the form of a CDS for a \$10 million bond and Investor B wishes to sell it. In an OTC market, illustrated in the top diagram, Investors A and B do not deal directly with one another; each goes to a dealer (Dealers C and E, respectively) who take the other side of the trade. Each dealer wishes to have zero net exposure, which it can do if the two dealers can in turn find one another. In the diagram, they do so through the offices of Dealer D.

Figure 2. OTC and exchange-traded derivatives

¹¹⁶ Stout, *supra* note , at 24.

¹¹⁷ See Mary Childs, *The Incredible Shrinking Credit-Default Swap Market*, Bloomberg, Jan. 30, 2014, available at <http://www.bloomberg.com/news/articles/2014-01-30/credit-default-swap-market-shrinks-by-half>

¹¹⁸ See 7 U.S.C. §2(h) (2012).



The exchange-traded market, represented in the bottom diagram, operates differently. Investors A and B negotiate directly with one another (through brokers), represented by the dashed line. Once they agree on a price, the clearinghouse becomes the counterparty to each and they look only to the clearinghouse for performance.

In both the top and bottom diagrams, the net outcome is a single transfer of \$10 million in credit risk from Investor A to Investor B; all other parties have a net exposure of zero. An exchange, seeing the entire transaction flow in one location, would report a single trade of \$10 million of risk. In the OTC market, however, measuring the transaction flow is more complex because the information comes from multiple, dispersed parties. It is possible that each pair of arrows in the top figure would be identified as a separate trade, creating an apparent volume of \$40 million in notional amount.

The decentralized structure of the OTC market and resulting multiple counting means that swaps dealers can have enormous gross positions but small net exposures. For example, at the time of the Lehman Brothers bankruptcy, Lehman reported gross CDS positions of \$72 billion to the Depository Trust and Clearing Corp., but when the trades were resolved in the bankruptcy process, the net cash exchanged through DTCC was \$5.2 billion.¹¹⁹ Noting the modest size of its net exposure and the relative ease with which Lehman's positions were paid out in the bankruptcy process, Rene Stulz's analysis is blunt: "Though Lehman was a

¹¹⁹ See Rene Stulz, *Credit Default Swaps and the Credit Crisis* 21 (NBER working paper 2009).

big CDS dealer, CDS were not the cause of Lehman's failure. Neither were they the direct cause of Bear Stearns' demise."¹²⁰

AIG is a different story. AIG is in the business of insuring risks and it did *not* intend to have a zero net exposure. It sold substantial amounts of credit protection on the super-senior tranches of CDOs without hedging its exposure. Its use of CDS rather than traditional insurance was presumably a form of regulatory arbitrage. If the cost of posting collateral for a CDS was less than the cost of holding reserves for an insurance product, as was likely the case, AIG had an incentive to use CDS.

The question, then, is what would AIG have done differently had CDS been regulated like futures contracts? There was a strong demand for insurance on CDOs that AIG believed it could meet at an acceptable level of risk. Making CDS illegal or costlier would not have led AIG to change its assessment of the risk of default on super-senior CDOs. Indeed, one of the ironies of the episode is that AIG invested heavily in CDOs at the same time it was insuring them and lost more through those investments than it did from writing CDS.¹²¹ Presumably, AIG would have responded to a different regulatory environment by using traditional insurance products rather than CDS.

Other users of CDS would also have had alternatives. One important source of demand was regulated banks and bank holding companies. Banks are permitted to take account of guarantees and credit derivatives to reduce the capital required for securities holdings.¹²² Banks will buy credit protection so long as it costs less than holding additional capital. But CDS are not the only form of credit protection.

Investment banks also took advantage of the fact that a long position in a treasury bond and a short position in CDS mimics the performance of the reference bond for the CDS. This made it possible for investment banks to meet the substantial demand for AAA rated CDOs by creating "synthetic" CDOs that used CDS referencing mortgage-related securities rather than buying the securities themselves. Ironically, then, much of the demand for "risky" CDS resulted from banks' and institutional investors' desires to hold AAA-rated assets.

¹²⁰ Id. at 25

¹²¹ Id. at 25.

¹²² See BOMFIM, *supra* note __, at 31-35 (discussing treatment of CDS under Basel I). See also BASEL COMMITTEE ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS: A REVISED FRAMEWORK 30 (2004) (Basel II).

Creating synthetic CDOs may have been impractical without CDS and to that extent aggregate losses in the crisis might have been modestly smaller. A careful estimate of the ABS CDO market concluded that taking into account the creation of synthetic risk through CDS, the ultimate mark-to-market write-downs on ABS CDOs will total \$420 billion.¹²³ That number would be smaller absent synthetics.

But as already noted, the size of the losses on the underlying instruments was not the main cause of the withdrawal of liquidity that made the crisis systemic. The financial system has sustained much larger total losses in the past without a systemic crisis. The fundamental problem was that short-term creditors had every incentive to run for the exits as soon as it was clear there would be *any* losses on AAA-rated collateral. This is exactly what they did.

D. Investment bank leverage

The SEC's 2004 adoption of the CSE program came closer in time to the financial crisis than either GLBA or CFMA. A page-one *New York Times* story shortly after the Lehman bankruptcy claimed that the CSE program "unleashed" the major investment banks, allowing Bear Stearns, among others, to increase its leverage "sharply."¹²⁴ Several economists, including Blinder and Stiglitz, subsequently argued that the adoption of the CSE program permitted investment banks to go from 12-to-1 leverage to 30- or 40-to-1 leverage.¹²⁵ These commentators have unfortunately misunderstood the SEC's net capital rule, Rule 15c3-1.¹²⁶

While the Bank Holding Company Act requires bank holding companies to register with and become subject to regulation by the Board, there is no analogous broker-dealer holding company act.¹²⁷ Accordingly, unlike bank capital rules that apply to holding companies as well as

¹²³ See Larry Cordell, Yilin Huang, and Meredith Williams, *Collateral Damage: Sizing and Assessing the Subprime CDO Crisis* (Federal Reserve Bank of Philadelphia working paper, May 2012).

¹²⁴ See Stephen Labaton, *Agency's '04 Rule Let Banks Pile Up New Debt, and Risk*, N.Y. TIMES, Oct. 3, 2008, at A1.

¹²⁵ See McLean, *supra* note __.

¹²⁶ 17 C.F.R. §240.15c3-1. For purposes of this discussion, I will refer to the 2003 version of the rule, the version just prior to the CSE program.

¹²⁷ GLBA gave investment banks the option of SEC supervision at the holding company level but did not give the SEC the authority to require it. See GLBA §231, 113 Stat. 1402 (1999). The provision added a new §17(i) to the Securities Exchange Act, which was then repealed by the Dodd-Frank Act, see Pub. L. 111-203, §617(a), 124 Stat. 1616 (2010).

banks themselves, Rule 15c3-1 applied only to the broker-dealer (I speak in the past tense because after the crisis the major investment banks converted to bank holding companies). The structure of the rule also reflected the SEC's mandate to protect consumers in comparison to the Board's broader concern about systemic stability.

Rule 15c3-1 provides that a broker-dealer must hold a sufficient amount of capital, calculated either by the "aggregate indebtedness standard" or the "alternative standard," at the broker-dealer's election.¹²⁸ The first requires that the broker's debts not exceed 15 times its capital. Capital is defined as assets minus liabilities with two important (and various minor) adjustments. First, certain subordinated debts are excluded from liabilities. However, a broker-dealer must inform its examiner if servicing its subordinated debt would result in its debts exceeding 12 times net capital.¹²⁹ This is the source of the frequently-cited 12:1 standard. Second, asset values are reduced by "haircuts" that reflect their relative liquidity.¹³⁰

The large investment banks' broker-dealer subsidiaries, however, calculated their capital based on the alternative standard.¹³¹ The alternative standard requires that the broker-dealer have capital (as previously defined) equal to the greater of \$250,000 or 2% of certain customer-related receivables. The largest broker-dealers, accordingly, were never subject to a 12:1 or 15:1 leverage limitation. They were instead subject to a standard that sought to assure that the failure of a customer to meet obligations to the broker-dealer would not cause the broker-dealer's collapse and thereby endanger the funds of other customers.¹³²

Investment banks became concerned in the late 1990s that the SEC's approach would not satisfy the regulators of their European operations, who require that capital rules apply at the holding company level.¹³³ The investment banks accordingly requested, and received, an amend-

¹²⁸ Id. §240.15c3-1(a)(1)(i)-(ii).

¹²⁹ Id. §240.15c3-1d(b)(8)(i)(A), (c)(2).

¹³⁰ Id. §240.15c3-1(c)(2).

¹³¹ See Richard Herring and Til Schuermann, *Capital Regulation for Position Risk in Banks, Securities Firms, and Insurance Companies* 15, 35, in *CAPITAL ADEQUACY BEYOND BASEL* (Hal S. Scott, ed., 2005).

¹³² A separate rule, 15c3-3, 17 C.F.R. §240.15c3-3 (2003), requires that a broker-dealer hold a segregated bank account in the amount of its net amounts due to customers.

¹³³ See Andrew Lo, *Reading About the Financial Crisis: A Twenty-One Book Review*, 50 J. ECON. LIT. 151 (2012).

ment to Rule 15c3-1 that permits voluntary calculation of required capital at the holding company level.¹³⁴

The amendments also changed the “haircuts” described above for broker-dealers that chose to be supervised on a consolidated basis. Instead of the formulas contained in the rule, these broker-dealers were permitted to use risk weights complying with Basel standards, in practicing meaning that they could use value-at-risk models similar to those used by the major bank holding companies.¹³⁵

While it changed the calculation of haircuts, the revised rule did not change the capital ratios to which broker-dealers were subject.¹³⁶ The changes also implicitly put the SEC for the first time in the position of assessing not merely whether broker-dealers could meet their obligations to customers, but also the systemic risks of their activities.

The SEC’s own Inspector General concluded that the agency did not perform this new task well.¹³⁷ Had the CSE program not been in existence, however, the SEC would not have had clear authority even to consider risks arising outside the regulated broker-dealer subsidiaries of the major investment banks.

How, then, have commentators concluded that the CSE program allowed investment bank leverage to rise from 12:1 to 30:1 or more? They did so by comparing apples to oranges along two different dimensions. They first confuse the holding company with the regulated broker-dealer. They then compare financial leverage to regulatory capital ratios.

Financial leverage is easy to understand and easily comparable from one type of institution to another. It is typically calculated as the ratio of assets to common equity, both as shown on the balance sheet. A regula-

¹³⁴ See Securities and Exchange Commission, *supra* note __ (adding a new paragraph (a)(7) to Rule 15c3-1 and amending Rule 15c3-1e).

¹³⁵ See *id.* at 34428 (“The alternative method of computing net capital responds to the firms’ requests to align their supervisory risk management practices and regulatory capital requirements more closely. Under the alternative method, firms with strong internal risk management practices may utilize mathematical modeling methods already used to manage their own business risk, including value-at-risk (‘VAR’) models...for regulatory purposes.”)

¹³⁶ See speech by the SEC’s Director of the Division of Trading and Markets, Erik Sirri, “Remarks at the National Economists Club: Securities Markets and Regulatory Reform” (April 9, 2009), available at <https://www.sec.gov/news/speech/2009/spch040909ers.htm>

¹³⁷ See Securities and Exchange Commission, Office of Inspector General, Office of Audits, *SEC’s Oversight of Bear Stearns and Related Entities: The Consolidated Supervised Entity Program* ix (Sept. 25, 2008) (the audit found that [the Division of Trading and Markets] became aware of numerous potential red flags prior to Bear Stearns’ collapse ... but did not take actions to limit these risk factors.”)

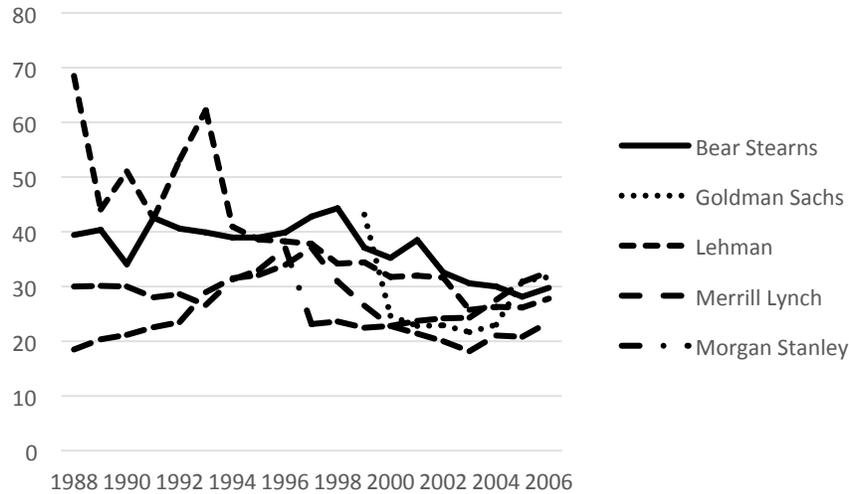
tory capital ratio, by contrast, is a calculation mandated by a specific regulatory scheme. It is also typically a ratio of assets to equity, but not necessarily measured on an accounting basis. Different classes of assets are often subject to multipliers or haircuts to reflect relative risk or liquidity. Capital itself may not reflect balance sheet common equity.

As a result, financial leverage and regulatory capital, while in the same ballpark conceptually, can differ substantially when calculated. A bank's Tier 1 capital ratio, for example, is conceptually a ratio of common equity to assets, but both are adjusted in various ways as determined by the U.S. bank regulators' implementation of the Basel capital accord. At the end of 2006, Citigroup's reported Tier 1 capital was 8.59% of risk-weighted assets. But its common equity was 6.3% of its assets when both are measured for accounting purposes.¹³⁸

Comparing apples to apples, leverage at the major investment banks did not increase after implementation of the CSE program. Figure 3 shows the financial leverage ratios of the five investment banks included in the program, calculated as the ratio of the holding company's accounting assets to its common equity, at the end of each fiscal year from 1988 to 2006 (or in the case of Goldman Sachs Group, beginning after it became a publicly-traded company in 1998). Averaged over the firms, leverage declined from 39:1 to 29:1 over the period. There was also considerable convergence in leverage ratios among the group beginning in the early 2000s. The argument that the CSE program increased leverage ratios of the major investment banks either in principle or in practice is demonstrably wrong.

¹³⁸ All data are taken from the COMPUSTAT database. Tier 1 capital, total assets, and common equity are variables CAPR1, AT, and CEQ, respectively, in the database.

Figure 3. Leverage ratios, selected investment banks



Source: COMPUSTAT. Leverage is the ratio of assets to common equity, each taken from fiscal year-end financial statements.

E. Miscellaneous deregulatory provisions

Although less frequently discussed than GLBA, CFMA, or the CSE program, the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA)¹³⁹ and the Garn-St. Germain Depository Institutions Act of 1982 (GSG)¹⁴⁰ have also been identified as contributors to the crisis.¹⁴¹ Commentators sometimes state that subprime lending was made possible only with the enactment of DIDMCA, which pre-empted state usury laws, and GSG, which permitted adjustable-rate mortgage loans.¹⁴²

This is not quite correct. Federal law had long pre-empted general state usury laws. The Banking Act of 1933 provided that national banks could charge interest at a rate based on the federal discount rate or at a

¹³⁹ Pub. L. No. 96-221, 94 Stat 132.

¹⁴⁰ Pub. L. No. 97-320, 96 Stat. 1469.

¹⁴¹ See Bhide, *supra* note __, at 91; Tymoigne, *supra* note __, at 4.

¹⁴² See Souphala Chomsisengphet and Anthony Pennington-Cross, *The Evolution of the Subprime Market*, FED. RES. BANK OF ST. LOUIS REV. 31, 38 (Jan./Feb. 2006) (“The ability to charge high rates and fees to borrowers was not possible until” passage of DIDMCA; GSG “permitted the use of variable interest rates and balloon payments.”).

state's general usury rate, whichever was higher.¹⁴³ However, if a state limited its state-chartered banks to a specific maximum rate, national banks located in that state were subject to the same limit.

The upshot was that a national bank did not have to comply with the general usury law of the state in which a loan was made, but only with the usury law applicable to state-chartered banks in the state in which the bank was located. The importance of the distinction became clear when banks made loans to out-of-state borrowers. A bank "exported" the (banking) usury law of the state in which it was located, regardless of any limits that might apply in the borrower's state.¹⁴⁴

Adjustable-rate and other alternative mortgage products had already been permitted by regulation to federally chartered banks and thrifts at the time of GSG.¹⁴⁵ The statute merely granted state-chartered depository institutions the same authority.¹⁴⁶

The Tax Reform Act of 1986, which ended the deductibility of consumer credit, was the engine that drove the rise of subprime lending.¹⁴⁷ The change made mortgage debt significantly cheaper on an after-tax basis than consumer debt even for borrowers with poor credit histories. Many of those borrowers subsequently chose to tap equity in their homes through "cash out" refinancing rather than use credit card or department store credit. From the time of the Tax Reform Act to the mid-2000s, about half of all subprime mortgages were cash out refinancing.¹⁴⁸

DIDMCA and GSG, even if they didn't do quite what commentators think they did, were among the regulatory and market developments in the 1970s and 1980s that brought profound changes to banking. The rise of subprime lending can be seen as a move from a system where credit was extended at a uniform (low) rate and rationed according to non-price factors to a system that depended more on rationing by price. Among the many reasons for the change was a concern that rationing on non-price factors disadvantaged minority borrowers.¹⁴⁹ More generally, the change in the mortgage market was part of an abandonment of attempts to use monetary and regulatory policy to maintain low interest

¹⁴³ See 12 U.S.C. §85 (1976).

¹⁴⁴ See *Marquette Nat'l Bank v. First of Omaha Corp.*, 439 U.S. 299, 313 (1978).

¹⁴⁵ See 12 U.S.C. §3801(a)(3).

¹⁴⁶ See *id.* §3803.

¹⁴⁷ See Chomsisengphet and Pennington-Cross, *supra* note ___, at 38.

¹⁴⁸ *Id.*

¹⁴⁹ *Id.* at 36-37.

rates regardless of the state of the economy, a topic to which we now turn.

III. THE DEREGULATORY ERA AND BANK STABILITY

The deregulation hypothesis, although often emphasizing GLBA, CFMA, and the CSE program, is often expressed in a more generalized form. The claim is that the New Deal banking and securities reforms ushered in a period of strong regulation that produced stable banking. However, beginning in the late 20th century, those regulations were watered down, allowing banks to take extreme risks.¹⁵⁰ The result was a dramatic increase in bank failures beginning in the mid-1970s and peaking during the thrift crisis of the 1980s and again during and after the 2007-08 crisis.

Stiglitz argues that banks were stable in “the quarter century after World War II when strong regulations were effectively enforced,”¹⁵¹ implicitly beginning the deregulatory era in 1970. Krugman starts the deregulatory era a decade later, stating that “major financial crises were much rarer between the end of World War II and the rise of financial deregulation after 1980 than they were before or since.”¹⁵²

A. The Golden Age

It is true that banks were highly stable in the United States from the New Deal era until the 1980s.¹⁵³ It is also true that intellectual support for regulatory management of the economy waned in the 1970s, leading to deregulation, most notably and persistently in the transportation sector. By the early 1980s, the deregulatory movement had spread to finance with the enactment of DIDMCA and GSG.

If deregulation caused bank instability, then we may be able to return to the golden age by reinstating the repealed regulations. Proponents of

¹⁵⁰ An influential regulator, Fed governor Daniel Tarullo, has made the same argument. See Daniel K. Tarullo, *Rethinking the Aims of Prudential Regulation* 4 (remarks at Federal Reserve Bank of Chicago Bank Structure Conference, 2014).

¹⁵¹ See Stiglitz, *supra* note __, at 12.

¹⁵² Paul Krugman, *Crises* 14 (2010), available at <https://www.princeton.edu/~pkrugman/CRISES.pdf>

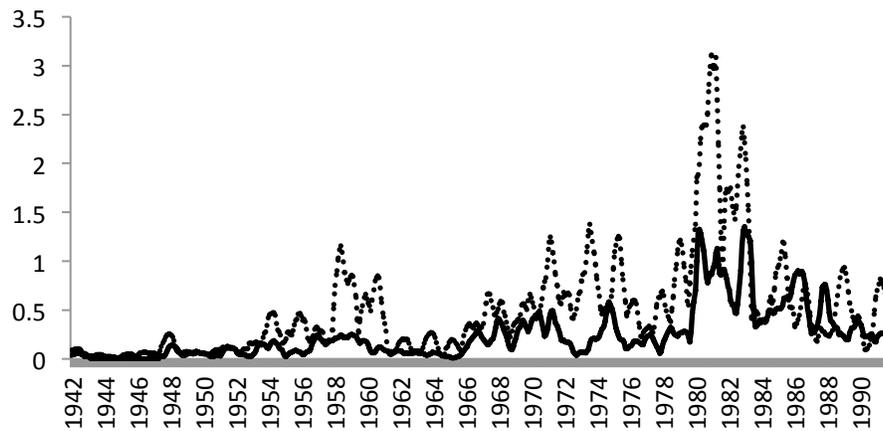
¹⁵³ See CHARLES W. CALOMIRIS AND STEPHEN H. HABER, *FRAGILE BY DESIGN: THE POLITICAL ORIGINS OF BANKING CRISES AND SCARCE CREDIT* 5 (2014) (U.S. while, “highly crisis prone,” had no bank crises from the 1930s to the 1980s); GORTON, *supra* note __, at 30 (same).

the deregulation hypothesis argue that we can do so but are vague about what regulations should be reinstated.

The ambiguity is not surprising because the argument that banks became unstable beginning in the 1970s or 1980s because New Deal-era regulations were abandoned is exceedingly weak. A far more plausible argument is that the inflation and interest rate instability of the 1970s, not an ideological commitment to free markets, ended the golden age.

The history of interest rates from World War II to the end of the 1980s divides neatly into two periods, a highly stable period lasting until the late 1960s, followed by a period in which the volatility of both short-term and long-term rates jumped roughly fourfold. This can be seen in Figure 4, which plots the interest rate volatility from 1942 to 1991. The long-term rate (solid line) is the average monthly yield on the Moody's index of AAA-rated corporate debt. The short-term rate (dotted line) is the secondary market yield on 3-month Treasury bills. Volatility is the standard deviation of monthly yields over a rolling 12-month period.

Figure 4. Interest rate volatility, 1942-1991



Solid Line: Rolling 12-month standard deviation of Moody's AAA bond yield. Source: WRDS. Dotted line: 12-month standard deviation of secondary market Treasury bill yield. Source: St. Louis Fed.

Banks make money from the spread between the long-term rates at which they lend and the short-term rates at which they borrow. If there is

a positive-sloping and stable yield curve, banks can make fixed-rate, long-term loans secure in the knowledge that they will earn a positive spread over the life of the loan. But when rates become highly volatile, the bank may end up making loans at a time of low rates and having to fund them at a time of high rates, substantially increasing the risk of severe losses.

Bank lending was largely free from interest-rate risk throughout the period 1942-1968. In only one month during that entire period did the Treasury bill rate rise above the Moody's AAA bond rate. From 1969-1990, it did so frequently. Not surprisingly, almost no banks failed in the prior period but many did during the latter.

Of course, if deregulation caused interest rate volatility, then it can be said to have caused bank instability as well. But there are plausible causes for the burst of interest rate volatility that are unrelated to banking and securities regulation. From the end of World War II until 1967, the annual federal budget deficit averaged 0.1% of GDP and the annual change in the consumer price index averaged 2.7% (or 1.7% if you omit the two-year burst of inflation after the end of wartime rationing and price controls). From 1968 to 1990, by contrast, the deficit averaged 2.8% of GDP and inflation averaged 6.6% annually.¹⁵⁴ That interest rates would react is hardly surprising.

This is not, however, to say that regulatory policy made no attempt to moderate interest rate volatility. The next section will describe government attempts to control interest rates during the golden era.

B. Regulatory attempts to control interest rates

Several monetary and regulatory measures from the New Deal until the 1970s were *intended* to hold nominal interest rates low regardless of the state of the economy. They were gradually abandoned beginning in the 1950s.

1. Monetary policy

To contemporary observers, the Fed's independent conduct of monetary policy is taken for granted as part of the plumbing of the financial system. It is easy to forget that it is a recent phenomenon. From the New Deal era until 1951, the Fed took orders from the Treasury.

¹⁵⁴ Data on budget deficits are from the Office of Management and Budget, available at <https://www.whitehouse.gov/omb/budget/Historicals>. Data on inflation are from the Bureau of Labor Statistics, available at <http://www.bls.gov/cpi/#tables>

In 1935, the Treasury requested that the Fed intervene in the Treasury bond market in order to hold down interest rates on those bonds. The Treasury's objective was to facilitate refinancing of expiring debt at attractive rates despite the devaluation of the dollar and a rising budget deficit. The Fed responded by actively purchasing Treasury debt, including long-term debt. It continued to do so for the remainder of the decade in order to maintain "stability" in the Treasury bond market.¹⁵⁵

This accommodation became a formal policy once the United States entered the war and the Fed became entirely subordinate to the Treasury.¹⁵⁶ The Fed was given a mandate to hold the yield on Treasury bills at no more than .0375% and on long-term Treasury bonds at no more than 2.5%. In periods when demand for Treasuries at those yields was insufficient, the Fed in effect became the market for Treasury debt.

The end of the war did not bring about the end of this arrangement. By 1946, the federal government's outstanding debt was 118% of gross domestic product.¹⁵⁷ In order to service that debt, the Treasury continued to insist that the Fed purchase as much of it as necessary to maintain rates at the wartime levels. The formal mandate ended only with the Treasury-Fed Accord of March 1951.¹⁵⁸

After the Treasury-Fed Accord, the Fed enjoyed greater but not complete independence. It continued to view its main job as maintaining low nominal yields on Treasury debt.¹⁵⁹ Only with the Paul Volcker-led Fed's decision to tame the high inflation of the 1970s by raising short-term rates to punishing levels did the Fed evolve into a fully independent central bank focused on maintaining a low and steady rate of inflation.

¹⁵⁵ See Barry Eichengreen and Peter M. Garber, "Before the Accord: U.S. Monetary-Financial Policy, 1945-51," in R. Glenn Hubbard, ed., *Financial Markets and Financial Crises* (1991).

¹⁵⁶ See ALLAN H. MELTZER, *A HISTORY OF THE FEDERAL RESERVE, VOL. 1: 1913-1951*, at 529-724 (2003) (chapter entitled "Under Treasury Control, 1942 to 1951").

¹⁵⁷ Federal debt is from *The Budget of the United States Government for the fiscal year ending June 30, 1948*, at 1389, available at https://fraser.stlouisfed.org/docs/publications/us_budget/bus_1948.pdf. GDP is from *Federal Reserve Statistical Release Z.1, Financial Accounts of the United States (hereafter "Fed Flow of Funds Report")*, *Historical Annual Tables 1945-1954*, at 2, available at <http://www.federalreserve.gov/releases/z1/current/annuals/a1945-1954.pdf>.

¹⁵⁸ See CONTI-BROWN, *supra* note , at 33-37.

¹⁵⁹ See Allan H. Meltzer, *Federal reserve independence*, 49 *J. Econ. Dynamics & Control* 160, 161 (2014).

2. Financial regulation

The Banking Act of 1933 prohibited the payment of interest on demand deposits and empowered the Board to regulate interest on savings and time deposits.¹⁶⁰ These rates were limited by the Board's Regulation Q.¹⁶¹ Throughout the 1940s, the rate on savings accounts and time deposits of more than six months was capped at 2½%, the same as the nominal rate on long-term Treasuries. Interest rate caps remained in place until the 1980s.

Regulation also encouraged financial institutions to hold government debt and investment-grade corporate debt, likely widening the interest rate gap between those "safe" assets and riskier debt. Insurance companies and pension plans were required to invest in low-risk assets, typically government securities and investment-grade corporate debt.¹⁶² Similarly, the Investment Securities Provision to which member banks were subject banned holdings of speculative securities.

3. Was the "golden age" a time of financial repression?

It is common in developing countries to see a deliberate and successful attempt to segment the market for credit so that the government and favored creditors borrow at administered rates while others are shut out of the formal financial system and have to borrow, if at all, from informal lenders at extremely high rates.¹⁶³

The regulatory tools that create this two-tier system include usury laws, deposit interest caps, strict exchange controls, limits on bank investments, bans on holding foreign assets, and so on. The restrictions ensure that within the formal financial system, borrowers pay artificially low rates and savers receive artificially low, usually negative, real rates of return. Savers thereby pay an unavoidable inflation tax that reduces government borrowing costs. That result goes under the heading "financial repression."¹⁶⁴

¹⁶⁰ Banking Act of 1933, §11(b), codified at 12 U.S.C. §371a.

¹⁶¹ See Regulation Q, 12 C.F.R. Part 217 (1949).

¹⁶² The Fed's Flow of Funds report during this period shows that insurance companies were invested overwhelmingly in bonds and mortgages, with the mix gradually shifting from more Treasury bonds to more corporate bonds. Pension plans were also invested principally in bonds, with Treasuries dominant. See *Fed Flow of Funds Report*, supra note , at 85, 87.

¹⁶³ See RONALD I. MCKINNON, *MONEY & CAPITAL IN ECONOMIC DEVELOPMENT* 68-84 (1973).

¹⁶⁴ See Alberto Giovannini and Martha de Melo, *Government Revenue from Financial Repression*, 83 AM. ECON. REV. 953, 954 (1993).

Reinhart and Sbrancia apply the term to the policies that U.S. and European governments used to hold down borrowing costs after World War II.¹⁶⁵ It seems clear that the U.S. government was concerned about the cost of servicing its enormous war debt and accordingly required the Fed to purchase substantial amounts of Treasury securities in the period 1942-51. As a result, the yield on Treasury bills was often below the inflation rate during that period.¹⁶⁶

It is less clear that the accompanying regulatory tools were sufficient to lock savers into these negative real rates. Regulation Q, in principle, would have done so were the caps binding (that is, below the rate banks would otherwise have paid) and if small savers had no realistic alternatives to bank deposits.

Both assumptions are doubtful. For much of the postwar period, banks paid interest on deposits at rates below the Regulation Q caps, reflecting the low market-determined rates on commercial paper.¹⁶⁷ Although moribund during the war, the private bond market revived afterward, giving savers a low-risk alternative to bank deposits. Unlike most European nations, the United States did not impose capital controls. It did, however, ban citizens from owning gold as an investment.

For present purposes, we may be agnostic about whether the federal government believed it could reduce the cost of servicing its debts through an inflation tax and, if so, whether its attempts were effective during the period from World War II until the 1970s. Beginning in the 1970s, the combination of higher budget deficits, higher inflation, the collapse of the Bretton Woods system, and the worldwide retreat of capital controls made these regulatory measures insufficient to hold interest rates low and protect banks against risk.

The government's only choices at that point were to deregulate or to create a vastly more coercive regulatory system to make financial institutions and households captive investors forced to accept negative real rates of return. It chose the former.

¹⁶⁵ See Carmen M. Reinhart and M. Belen Sbrancia, *The Liquidation of Government Debt*, IMF working paper (2015).

¹⁶⁶ See Carmen M. Reinhart, Jacob F. Kirkegaard and M. Belen Sbrancia, *Financial Repression Redux*, FIN. & DEV. 22, 23 (June 2011).

¹⁶⁷ See R. Alton Gilbert, *Requiem for Regulation Q: What It Did and Why It Passed Away*, Federal Reserve Bank of St. Louis Review 22, 26

4. *The end of the golden age*

By the late 1960s, short-term market interest rates were on the rise. The Regulation Q limits began to bind, and painfully. Savers looked for an alternative to bank accounts that would pay market rates of interest.

The mutual fund industry provided the alternative. In the early 1970s, it introduced the money market mutual fund, which held commercial paper and other short-term securities and issued shares to investors that they could redeem on demand, including by writing a check.¹⁶⁸ Rather than allowing the redemption price of the shares to fluctuate daily with the market prices of the underlying portfolio, these new funds maintained a fixed redemption price of \$1.00 per share and quoted a daily yield.¹⁶⁹ This made them an attractive and intuitive alternative to bank deposits.

Banks had to find ways to pay a market rate on deposits in order to survive. In a high-inflation environment, a free toaster was no longer enough to induce customers to open an account paying little or no interest. Banks responded with the “negotiable order of withdrawal” account beginning in 1973.¹⁷⁰ These were accounts that paid interest and permitted a limited number of withdrawals by check; the banks argued that they were not demand deposits.

Congress allowed experimentation with NOW accounts, permitting them in 1973 within Massachusetts and New Hampshire, then in 1976 throughout New England.¹⁷¹ DIDMCA permitted NOW accounts nationwide beginning in 1981.¹⁷² The statute also phased out Regulation Q, enabling further competition and innovation in deposit accounts.

These provisions enabled banks to attract deposits but increased their cost of funds. The result was an immediate deterioration in the spread

¹⁶⁸ See John A. Adams, *Money Market Mutual Funds: Has Glass-Steagall Been Cracked?*, 99 BANKING L.J. 4, 6-8 (1982).

¹⁶⁹ Because the Investment Company Act of 1940 requires that redeemable shares be marked to market daily, the Securities and Exchange Commission in 1977 issued an interpretive release disallowing the fixed dollar value. See Securities and Exchange Commission, “Valuation of Debt Instruments and Computation of Certain Price per Share by Certain Open-End Investment Companies (Money Market Funds),” 47 Fed. Reg. 5428, 5428-29 (1983). However, after considerable outcry, it exempted money market funds on an individual basis from the mark to market requirement and ultimately adopted a rule permitting money market funds to maintain a fixed dollar value. See 17 C.F.R. §270.2a-7 (1984).

¹⁷⁰ See “Haselton Brothers’ Role in Banking Innovations,” *New York Times*, January 4, 1983.

¹⁷¹ See Pub. L. No. 93-100, §2, 87 Stat. 342 (1973); Pub. L. No. 94-222, §2, 90 Stat. 197 (1976).

¹⁷² See DIDMCA §303, 94 Stat. 146.

between loan and deposit rates. Meanwhile, the Bretton Woods fixed exchange-rate system collapsed, the United Kingdom and the rest of Europe dismantled their remaining capital controls, and creditors and debtors gained the ability to shop for the most attractive rates anywhere in the world.¹⁷³

The era of low-risk banking had ended. In short order, the United States would experience its first banking crisis since the 1930s in the form of the savings & loan crisis of the late 1980s. Anticipating the later claims of Stiglitz et al., Jonathan Macey argues that the savings & loan crisis was “directly attributable to deregulation.”¹⁷⁴ It is more accurate to say that the crisis was *associated* with deregulation. A third variable—high inflation—caused both the deregulation and the crisis. The subsequent history of banking would include vigorous competition from money market mutual funds, investment banks, foreign depository institutions, and shadow banks that forced regulated banks to seek higher returns by taking greater risks.

C. A cautionary note

It is now obvious why critics who decry the dismantling of regulation beginning in the 1980s are quiet about which regulations they would reinstate. Arguing in favor of capping the interest rates that banks, money market mutual funds, and other financial institutions can offer their customers is not likely a political winner.

Instead, since the financial crisis, policy makers and commentators have touted “macro-prudential” regulation, or regulation focused on the stability of the financial system as a whole rather than of individual firms. Banks have been required to tighten their lending standards and hold more capital. The major investment banks have become subject to banking regulation by virtue of their conversion to bank holding companies. Dodd-Frank gives the Fed the ability to regulate other types of financial institutions to the extent the Financial Stability Oversight Counsel finds them systemically important.

In a system of risk-weighted capital rules in which government debt receives a risk weight of zero, these changes will increase the demand for government debt at the margin. Banks have responded to the incentive; they increased holdings of government debt and Fed balances

¹⁷³ See M.J. Artis and Mark P. Taylor, *Abolishing Exchange Control: The U.K. Experience* (Centre for Policy Research Discussion paper, 1989).

¹⁷⁴ See Macey, *supra* note __, at 11.

(which fund the Fed's purchases of government debt) by more than \$2 trillion in the five years since the enactment of Dodd-Frank.

Meanwhile, the Securities and Exchange Commission has rescinded the exemption allowing institutional prime money market mutual funds to maintain a constant \$1.00 redemption value but maintained the exemption for those holding exclusively cash and government debt.¹⁷⁵ The marginal effect will again be to increase holdings of government debt at the expense of private sector debt.

This is not an unwelcome development from the Treasury's perspective now that the debt to GDP ratio is nearly back to where it was at the end of World War II. As was true after the war, the Fed holds a significant portion of that debt.¹⁷⁶

These policies have reduced the earnings on bank portfolios, but so far their funding costs have also been reduced. Inflation and GDP growth are low, producing low short-term interest rates. Having been burned in the financial crisis, savers have been willing to tolerate slightly negative real returns on risk-free assets. It has been relatively easy for governments and economists to argue that these negative real returns are socially desirable because they will promote growth by discouraging savings and encouraging spending, thus boosting aggregate demand.

What will happen if and when inflation and growth increase? Financial institutions will no longer willingly hold government debt unless yields rise. Households will not willingly hold bank deposits, money market fund shares, or similar low-risk assets unless they provide a higher rate of return.

Facing rapidly increasing inflation in the 1970s, the government chose not to try to maintain low nominal (and negative real) interest rates. It could have tried to do so by regulation and central bank policy. Congress could have subjected money market mutual funds to Regulation Q's interest rate caps. Congress and regulatory agencies could have ruthlessly stamped out innovations that allowed financial institutions or shadow banks to pay market rates of return.

¹⁷⁵ See 17 C.F.R. §270.2a-7 (2015).

¹⁷⁶ As of November 2016, the Fed holds approximately \$2.5 trillion of the \$19 trillion Treasury securities outstanding. See St. Louis Fed web site: <https://fred.stlouisfed.org/series/treast>. It is estimated that through the rollover of maturing debt, the Fed will purchase about half of all new Treasury issues in 2016. See <http://www.bloomberg.com/news/articles/2016-01-18/fed-s-216-billion-treasuries-rollover-recalls-crisis-era-buying>

But the government did not do so. In retrospect, the decision to allow money market mutual funds to operate outside the bounds of Regulation Q made much of the subsequent deregulation inevitable.

It is tempting to say that Congress and regulators did not fight the battle against rising interest rates because it would have been futile. But another and perhaps more compelling reason is that the government saw no need to fight. Fortunately, in the early 1970s, the ratio of federal debt to GDP reached a postwar low of 30.7%.¹⁷⁷ Rising yields on government debt were not a great threat.

Will the same be true if and when inflation rises and the debt to GDP ratio remains near 100%? Or will the government be tempted to use regulatory means to require financial institutions and households to lend to the government at below-market rates under the guise of protecting the financial system from excessive risk-taking? If so, the deregulation hypothesis will provide the intellectual underpinning.

IV. CONCLUSION

The crisis of 2007-08 was extremely painful for the financial system and the real economy. It is easy to understand nostalgia for the Glass-Steagall Act and other apparent regulatory quick fixes. Unfortunately, deregulation was not a cause of the financial crisis, and new restrictions on bank securities activities and OTC derivatives trading will not insulate the financial system from interest rate and exchange rate volatility. During the golden age of bank stability, interest rates were low and stable. When those conditions ended, so did the stability of the banking system.

We must rethink financial regulation so as to promote capital formation, permit small savers to accumulate wealth, and minimize the cost of financial crises. This is a daunting task that we merely delay by choosing to believe a mistaken hypothesis about the connection between regulation and the 2007-08 crisis.

¹⁷⁷ Data from Federal Reserve Economic Data, Federal Reserve Bank of St. Louis, series GFDEGDQ1885.