

THE COOPER UNION FOR THE ADVANCEMENT  
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TOO BIG TO FAIL & RISING ILLIQUID  
INVESTMENTS

BY

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# Abstract

In this study, we examine the effects of increasingly leveraged Too Big To Fail institutions, and the effects this will have on the size of potential government bailouts. We postulate that the effects of an inverted yield curve teamed with high leverage will form a volatile market. The collapse of asset prices, and the scope of liquidity squeeze threaten to set off ever more viscous downward cycles for asset valuations.

Deep and prolonged flattening yield curves for Treasury bills propagate into the municipal and corporate bond markets. Knowing that rates in the securities market are dependent on treasury rates, we then move to examine the corporate profits of financial services that typically invest in the longer term securities market. We attempt to show that hedging and leverage were implemented in greater force leading up to the financial crisis. Leverage, hedging and arbitrage strategies, help the financial firms to pull artificial returns from already distorted asset values.

We postulate that the yield curve flattening is more dangerous today than ever before in history. The flattening of the curve is correlated strongly with an increase in short-term funding and other indicators of hedging at play; such as the margin at broker/dealer indicator. The sheer scope of leveraging in asset purchases forces the government to step in with unprecedented liquidity for systemically important institutions. In order to counteract the longer revaluation process, we postulate that the government/federal Reserve will have to provide larger and longer liquidation services to the financial arena. In short, hedging and leverage in the financial world, has blown out of proportion and this cannot be reversed in fractional-reserve banking world; debt and leverage can always be obscured as was seen in asset-backed securities and collateralized debt obligations. The short-term debit on margin does not seem to be fading away, and for that reason we believe that inherent danger remains in the leveraged banking world; fractional banking and leveraged time-sensitive investments.

We conclude our study with some important metrics to be watched carefully by the governing bodies. TBTF is a continuing issue that the government is intimately required to facilitate, due to its responsibility to the individual wealth of citizens in this country. Because the T-bill is a base rate on which all other asset value is derived, we examine additional indicators with respect to the inverting of the yield curve.

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# 1 Introduction

Businesses must fail for others to succeed. A failing business is not atypical and the United States economy is rarely disturbed by this process. In fact, losses incurred by a fleeting business are resolved quite systematically under the Federal Bankruptcy Code (FBC). The business and its counterparties are negatively effected by their shortcomings, but the externalities of the failure are insignificant. [11] The notion of Too Big to Fail (TBTF) results from businesses whose individual failure leads to disproportionately large adverse externalities that cannot be contained. [23] The sheer size, asset value, and leveraging process that are inherent to financial firms (banks included) tend to bring about TBTF incidents. The counterparties of financial firms are of an extraordinary quantity and their combined losses may have a profound impact on the United States economy.

In addition to the inherent TBTF problem in financial firms, there has been an across the board increase in leverage and more rampant use of short-term funding to cover margin requirements. These practices have obscured true asset value and discouraged private sector buyouts in times of crisis. [13] It has become increasingly difficult for a private buyer to value financial firm illiquid assets. Typically a TBTF institution will be required to transfer assets from its failing business to a third party of impeccable solvency. The third party will receive extremely discounted illiquid assets in exchange for their liquidity. The discounted assets from the failing financial firm would otherwise have been sold in the open market with the risk of considerable fire sale losses. [11] If the third party is able to pass the necessary time without this liquid capital the illiquid assets, obtained from the failing firm, will provide extremely generous returns. The TBTF business will survive having incurred serious losses, but the negative externalities of liquidation and excessive asset devaluation, traditionally seen in bankruptcy, will have been avoided. The third party of impeccable solvency has ranged from wealthy individuals, to well positioned investment firms, and on a continued prevalence the federal government.

The federal government is the lender of last resort and will only step into negotiations with the failing business if severe externalities would manifest from liquidation. The federal government would always like these TBTF situations to be resolved in the private sector, where the illiquid assets of a failing company become the longer term investments of a successful business. [3] [4] The federal government has been the prevailing third party, to purchase increasingly complex financial assets of uncertain value. The federal government must either clear illiquid assets from a firm's balance sheet or inject liquidity, to reduce adverse externalities of an insolvent firm failure and liquidation. The United States government is uniquely positioned as a constantly solvent third party in TBTF incidents. The United States government has trouble with TBTF transfers of assets, because even the implicit guarantee of government support of troubled financial firms brings about moral hazard. [4] [23] The possibility of a creditor bailout creates moral hazard, no matter where the bailout funds originate, and it is moral hazard that provides the largest banks or other large financial firms with competitive funding advantages. [21] [18] Moral hazard and the implicit government role as the third party buyer of assets, in TBTF incidents, significantly undermines market discipline. [16]

In the financial crisis of 2008, the United States government stepped into an historic third party TBTF position. [1] The benefactors of this decision should indeed be the entirety of consumers and businesses in the nation's economy. In taking unprecedented steps to clear illiquid assets from the economy, the United States government and the Federal Reserve System, hoped to stabilize the financial system and all the services that are provided by that system. [5] A major problem with TBTF financial institutions is that the financing services they offer may be disrupted and contribute to a longer economic suppression.

In this report a closer examination is given to the prevalence of government, as well as federal reserve, in supporting TBTF financial institution. The response of government to protect the wealth of its people and maintain economic stability is considered in the context of historical legislation on the part of United States regulators.

## **2 The Role of Banking: Necessary and Dangerous**

### **2.1 Leverage by Design**

The banking industry in this country and in most others world-wide is inherently leveraged. Fractional-reserve banking has become a standard practice, in which a commercial depository bank can lend out a multiple of the funds it claims as assets. Fractional-reserve banking allows for the expansion of credit during prosperous times. Banks lend a regulated multiple of their assets out as new loans, and as the asset base value appreciates the bank may loan out an additional multiple of this appreciation. The opposite is true in difficult economic times, where a bank may have over-valued its assets or have seen a depreciation in the value of the assets on which a lending ratio is set. In an economic downturn the bank's asset devaluation causes a spike in their fractional lending ratio; this ratio is typically set by the central banking system. Seeing a spike in the liabilities to asset ratio, during an economic downturn, causes a phenomena known as a 'bank run.' In a bank run, the depositors become worried that the bank will not be able to pay back their individual liability, and in a rush of anxiety all the depositors run to the bank to redeem their certificate of deposit and clear their individual liability from the bank's balance. Bank runs are a purely behavioral response to the fear of losing saved wealth. With the fractional-reserve banking system in place, the bank can never actually meet the simultaneous call on all depositor certificates.

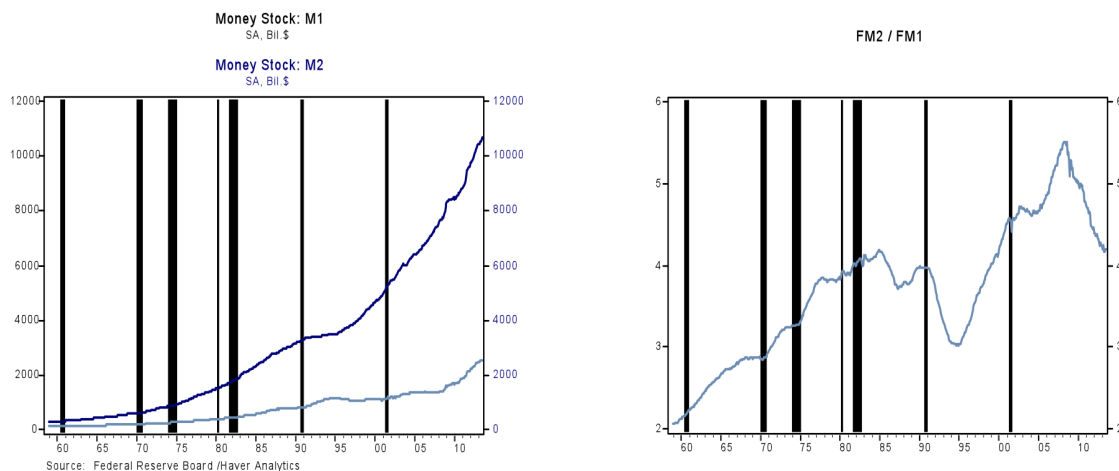
During the Great Depression bank runs caused the liquidation and corresponding devaluation of many assets. In the process, the wealth of ordinary depositors was at risk and the entire banking system experienced record asset devaluations. The government response was to establish the Federal Depositor Insurance Corporation (FDIC) to insure all the depositors of a depository bank. The creation of the FDIC was a major intervention in the laissez-faire type of capitalism that America had established and coveted for such an extended period. The FDIC was established to protect the wealth of the ordinary citizen, but also to cultivate the best debt service systems in the world. The use of debt service and the availability of

credit is extremely useful in a growing economy. Debt funds the expansion of public works and private ventures. Once the FDIC was created, depository banks were protected from the illiquid nature of their longer-term loans. One of the greatest dangers in asset valuation is the hidden risk of holding an illiquid asset. In an economic downturn, the preference for liquidity threatens the value of illiquid assets, and may very well lead to excessive discounting of that illiquid asset.

Investment has changed drastically over the past century, and looks to continue on its current trajectory. In lieu of depositing wealth with a depository bank, ordinary citizens have directly and indirectly begun allocating this wealth elsewhere with the promise of higher returns. Citizens looking to grow their wealth began allocating funds in investment vehicles, that promised and delivered superior returns to that of the depository bank. Individual citizens need not actively seek out investment vehicles, because they are already connected to them through their pension and retirement 401k funds. The flow of wealth into these new investment vehicles is the source of many troubles for the federal government. The former government action, establishing the FDIC, was meant to protect the wealth of the nation while at the same time giving depository banks continued protection over their illiquid loans. Although the government sought and continues to seek preservation of the nation's wealth and general economy, it cannot protect the illiquid and extremely leveraged investment system.

### **2.1.1 Long Wave: Market Level of Investment**

Hedge funds, mutual funds, unit investment trusts, and money market funds are all relatively new in the field of economics. The coordinated rise of these new time-sensitive investment vehicles and their mass adoption by the people of the United States is revolutionary in economics. The populous of this nation and the world have been illustrating the preference for investment vehicles for a very long time now. Average citizens are taking on greater risk and illiquidity.



(a) Uni-scale M1 and M2

(b) M2 Divided by M1: Historic Leverage

Figure 1: Divergence of M1 and M2 Money Supply Indicators

In figure 1 the M1 indicator is representative of cash and checking deposits (CDs) in the United States, taking into account the commercial banking power to create money through the practice of fractional reserve banking. The M2 indicator is representative of all that is M1, but with the addition of “near money,” such as money market funds and other illiquid time-sensitive assets. The divergence of the two indicators, occurring in the period from 1970 through 1985 and in the period from 1995 through 2007, illustrates the massive movement of citizen wealth from commercial banking CDs to more complex illiquid investment products. The Graham-Leach-Bliley Act of 1995, repealed a portion of the Glass-Steagall Act of 1933, which prohibited any one institution from acting as any combination of an investment bank, a commercial bank, and an insurance company. This small repeal paved the way for an entire repeal of Glass-Steagall and the corresponding divergence of M2 from M1 as illustrated by the slope in figure 1.

The growing divide between traditional CDs and other illiquid assets, should be of great concern for the federal government. Unlike the FDIC protection of illiquid CDs, these newer assets are unprotected against liquidation devaluation in economic downturns. The newer investment assets are taking a greater share of the nations wealth year after year. With this wealth unprotected against liquidation and the corresponding devaluation, this economy is poised for a massive devaluation of wealth not seen since the Great Depression.

## 2.2 Liquidation

The process by which a bank is forced to regain liquidity is called a fire sale. A fire sale is destructive for a bank because there is an enormous cost of obtaining the necessary liquidity. Once the fire sale begins the market will catch on to the distressed bank’s liquidity

preference. Bidders for the illiquid assets will low ball the distressed bank in search of extremely discounted assets and once the market is functioning efficiently, with all parties having knowledge of the fire sale, the low ball prices may be accepted by the distressed bank; it all depends on how much the distressed bank really needs the liquidity.

All of this fire selling is bad for the economy. When bidders get away with low ball offers, the market price and value for all assets similar to the fire selling asset may become unsettled. The lack of demand for a particular illiquid asset, may in turn lead to a devaluation across that asset class. A simultaneous flight to liquidity by multiple market participants may trigger a viscous downward spiral in the price of many of illiquid asset types being held by financial firms. In the unprotected world of investment vehicles, the downward spiral can be exacerbated by waves of investors cashing out of their investment positions in a frenzy to exit with the highest asset value.

The fire sale of an entire asset class, by an insolvent (bankrupted) financial firm, will increase the likelihood of a market disturbance in that asset class. A bank is economically insolvent when the market value of its assets falls short of the value of its deposits and other debt, including derivatives liabilities. The bankrupted firm's capital (net worth) turns negative and it cannot pay off all of its creditors in full and on time. A downward spiral is all the more a reality with a bankrupted financial firm. Banking has historically warranted a different insolvency resolution process than applies to most other firms under the Federal Bankruptcy Code. [2] Administrative processes have been devised that grant regulators authority to initiate resolution of a troubled and large financial institution, in order to protect the stability of market asset value.

## 3 Government Intervention

### 3.1 Evaluating Adverse Externalities

Evaluating adverse externalities helps regulators determine whether or not an insolvent bank should be liquidated through the Federal Bankruptcy Code. If adverse externalities could endanger the public good, then the insolvent financial firm undergoes either a special liquidation process or is made solvent through the direct injection of liquidity supported by the government. Deciding whether or not a financial firm should be "saved" through direct liquidity injection supported by the government is a matter of assessing how large the adverse externalities; a firm is 'saved' if it is Too Big To Fail (TBTF).

If the financial firm could fail conventionally through the FBC without giving rise to some viscous downward spiral of asset value, then the insolvent firm is conventionally liquidated. TBTF has been applied particularly in finance, because losses suffered by some large counterparties of an insolvent large firm, including other financial firms, may have disproportionately large adverse externalities on the economy served by the bank. [11]



A particular set of adverse externalities is portrayed below by William Dudley, President of the Federal Reserve Bank of New York (FRBNY):

“The root cause of “Too Big To Fail” is the fact that in our financial system as it exists today, the failure of large complex financial firms generate large, undesirable externalities. These include disruption of the stability of the financial system and its ability to provide credit and other essential financial services to households and businesses. When this happens, not only is the financial sector disrupted, but its troubles cascade over into the real economy. [5]

Proponents of government intervention, such as FRBNY President William Dudley, argue that the wealth of average americans and the strength of the economy come above all else in these TBTF situations. The opposition to government intervention, in these TBTF situations, argue that when government gets involved there is an erosion of market discipline and a disruption in free market asset valuation.

## **3.2 Lender of Last Resort**

In the United States, the regulators are allowed to deviate from the least cost resolution principle in the case of failure of an “essential” financial firm. [16] Essential firms can be those that follow up bankruptcy liquidation with an economy wide viscous downward spiral in asset value. Essential firms can also be those in the “public interest,” such as those firms supplying credit and debt servicing. It is very difficult to weigh the importance of these “public interest” financial firms. [11] However, it is clear that the regulators and United States government only act to protect the wealth of the average american and the debt services that emanate from the financial firm business. The government and its regulators have hinted at TBTF by mentioning exceptions to the rules for “essential” and “public interest” financial firms.

## **3.3 Examples Abroad**

In the context of system-wide crises, the governments of Japan, Sweden, Finland and Norway have granted blanket state guarantees to all financial firms, regardless of their size. [16] These nations understand the intimate connection between a viscous downward spiral in asset value, and the corresponding downward spiral in personal wealth. With smaller nations, giving blanket coverage to all financial firms in the economy bolsters the supply of credit and protects the reputation of the smaller economies. [16]

**Figure 1: Relative importance of the 1-3 largest banks in industrialized countries**

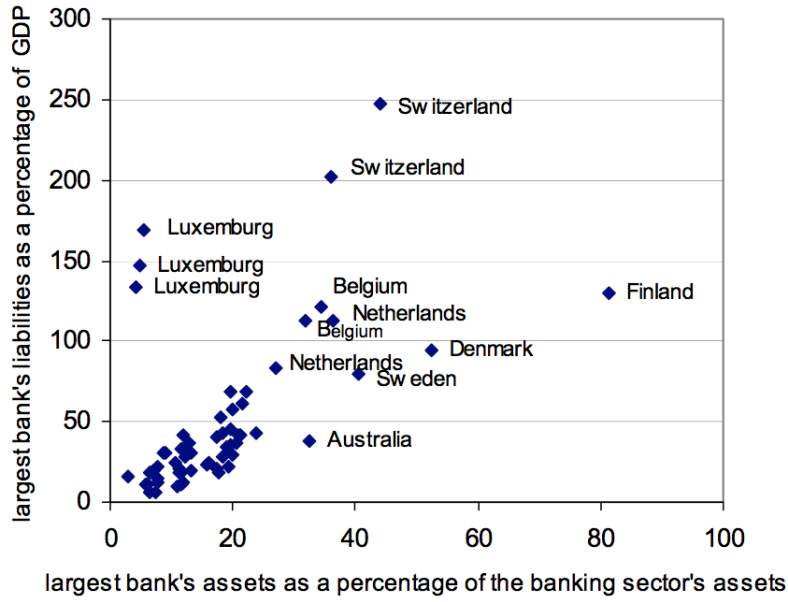


Figure 2: Leverage in Foreign Financial Firms

In figure 2, the asset value of the top three financial firms in a variety of nations is close to the entire economy's gross domestic product. A downward spiral in the asset value at these financial firms could create losses the size of the national gross domestic product, and cripple their national economies. In order to protect the financial firms from having to fire sell their assets in a liquidity squeeze the government explicitly guarantees these illiquid assets, in turn protecting the wealth of their citizens and the wealth of the global economy. As an extrapolation from the illiquid asset protection guaranteed under the FDIC in the United States, these foreign nations have begun explicit backing enormously leveraged financial firms.

## 4 Market Behavior

### 4.1 Legislation

Public perception that a TBTF policy exists creates distortions in an otherwise free market. 'Implicit backing' by the government can give favored financial firms merger premium advantages, bond funding advantages, liquidity advantages, and can exacerbate the 'too big' problem by enticing even more firms into their already swollen ranks. [1] [3] [18] [16] Oftentimes it is not sufficient for the government to remain passive during times of prosperity, they must actively deny holding a TBTF policy and even legislate directly against it. The

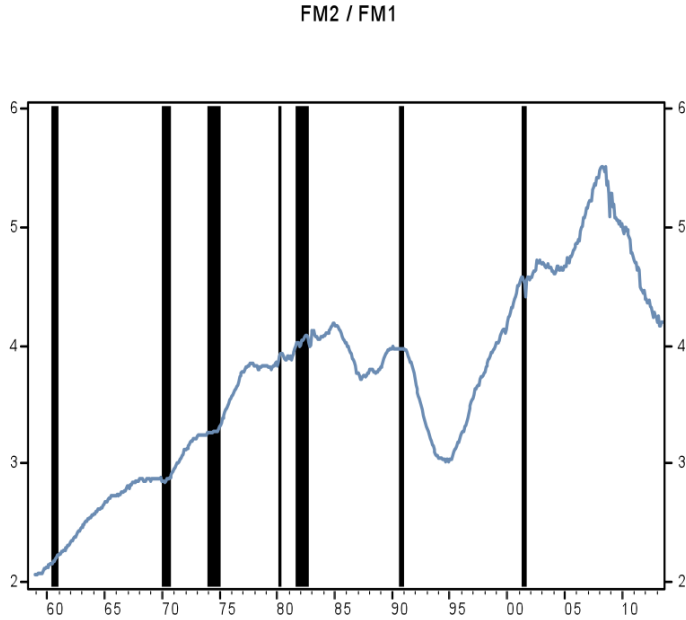
first piece of major legislation targeting TBTF was passed in 1991 with the Federal Deposit Insurance Corporation Act (FDICIA) in response to criticisms that began after the government mishandling of the failure of Continental Illinois Bank in 1984. [20]

The seventh largest bank in the US at its peak, it had made many imprudent business loans, especially to oil and gas companies hurt when energy prices declined, and overpaid for some acquisitions including Penn Square Bank which had made even more imprudent loans. It was also badly exposed in several developing markets where it had made some incorrect assumptions about future interest rates. As a result, the government needed to step in and acquire the failing institution. Fortunately, the bank did not have a large number of insured deposits; it funded itself in large part by taking brokered deposits too large to be covered by FDIC insurance, and by issuing notes and bonds. [14]

The government would traditionally opt for the entire firm to be liquidated unless a willing private sector acquirer could be found and asset values somewhat preserved in a buyout; instead of bank failure and liquidation. However, on two occasions prior to the failure of Continental Illinois the FDIC had supported a failed bank by guaranteeing all creditors; not just the insured depositors. In a widely criticized misstep, the government bailed out Continental Illinois. By the end of the situation the federal government had spent seven years and approximately \$1.1 billion to resolve Continental Illinois, with very little of the bank asset values preserved. [14]

An immediate liquidation would have been costless to the FDIC; Continental Illinois's assets would have managed covering the insured deposits, but later estimates suggest that six banks would have collapsed as a result; TBTF discussions began. The phrase had been used before, but became a household term after Congressman Steward McKinney charged that the FDIC had guaranteed uninsured deposits and bonds because it thought that Continental Illinois was 'too big to fail'. The FDIC denied the charge, claiming they were rightly acting to minimize taxpayer losses.

The FDIC continued to guarantee all creditors following this incident; uninsured depositors took losses in just 20% of bank failures in the years leading up to FDICIA. [14] Before the Act, the indication to the public was that the economy was operating with a too big to fail policy in place, creating a dilemma for bank regulatory agencies. Recall figure 1, and subfigure 1b, that shows the expansion of investment to time-sensitive securities in the period leading up to the bailout of Continental Illinois in 1984. This trend is larger than business cycle recessions, and pertains explicitly to the rise and fall of TBTF as it pertains to financial firms.



M2 Divided by M1: Historic Leverage

FDICIA was passed with the intention of reducing taxpayers exposure to financial system losses, including their exposure at too big to fail financial institutions. By passing FDICIA, Congress was signaling that it was serious about ending 100 percent de facto deposit insurance. [20] The FDIC had previously extended this guarantee after completing a process of comparing bids to acquire the entire bank (including all its deposits) with the cost of liquidating the bank, which generally produced the result that covering all deposits was less expensive. FDICIA sought to change this process by mandating least-cost resolution, which required consideration of all possible resolution methods. This mandate was widely understood as indicating that the FDIC should also consider purchase and assumption transactions in which the acquirer assumed only the insured deposits.

It is clear from the FDICIA measures to address specific systemic issues that the intent of Congress was virtually to eliminate the practice of TBTF. Although FDICIA did not ban the TBTF financial firm doctrine, it substantially reduced the likelihood of future large financial firm bailouts. Bankers and bank depositors could no longer casually assume that any given bank would be considered TBTF, and regulators became more likely to look for ways to close a large failing bank without protecting uninsured creditors. If conditions were such that a large fraction of the banking system was potentially not viable, regulators may have no choice but to protect uninsured depositors. However, for most other systemic risk situations, including financial market risk, the potential was created for identifying and developing alternate solutions. [20] Indeed, the percentage of uninsured depositors who took losses in bank failures following the act and leading up to the 2001 crisis increased to 65%, although this contrast is partially due to calmer markets than the decade previous had experienced due to the Savings and Loan Crisis. [14] [20]

The final say on TBTF, the FDICIA, was eventually watered down in response to demands from regulators and the Bush administration that the FDICIA provide for a systemic exception to its requirement that problem financial firms must be resolved at the lowest cost to the insurance funds. In the United States, the regulators wanted the right to deviate from the least cost resolution principle in the case of failure of an 'essential' financial firm. [11] [16]

Several years later the consequences of allowing Lehman Brothers to fail led the government to move aggressively to convince financial markets that they would not allow another major bank to fail in this manner. Congress passed the Troubled Asset Relief Program (TARP) to funnel hundreds of billions of dollars to support financial firms in a period of extraordinary financial turbulence. In addition, the Federal Reserve Board lent hundreds of billions of dollars to financial firms through a series of newly created special lending facilities. On top of these measures, the Federal Reserve and Treasury also took extraordinary actions to keep Citigroup and Bank of America solvent, at a time when they almost certainly would have collapsed without government support. [1]

These circumstances led to the second major legislation effort against TBTF. In July 2010, Congress passed and President Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act. Dodd-Frank's preamble states that one of the statute's primary purposes is to end TBTF and to protect the American taxpayer by ending bailouts. As he signed Dodd-Frank, President Obama declared, "Because of this law, . . . there will be no more taxpayer-funded bailouts. Period." [7] [22] Dodd-Frank made meaningful improvements in the regulation of large financial firms. It established a new umbrella oversight body named the Financial Stability Oversight Council (FSOC) that designates systemically important financial institutions (SIFIs) and makes recommendations for their supervision. Dodd-Frank also empowers the Federal Reserve Bank to adopt stronger capital requirements and other enhanced prudential standards for SIFIs. Most importantly, Dodd-Frank established a new systemic resolution regime named the Orderly Liquidation Authority (OLA), which aims to provide a superior alternative to the bailout or bankruptcy choice that federal regulators confronted when they dealt with failing SIFIs during the financial crisis. [22]

Nevertheless, Dodd-Frank arguably did not solve the TBTF problem. Dodd-Frank relies primarily capital-based regulation, the same supervisory tool that failed to prevent the banking and thrift crises of the 1980s as well as the recent financial crisis. In addition, the supervisory reforms contained in Dodd-Frank depend for their effectiveness on the same federal regulatory agencies that failed to stop excessive risk taking by financial institutions during the booms that preceded both crises. Additionally, Dodd-Frank's most important reform for preventing future TBTF bailouts, the OLA, does not completely prohibit future rescues for creditors of large, complex financial institutions (LCFIs). The Federal Reserve Bank can provide emergency liquidity assistance to troubled LCFIs through the discount window and (perhaps) through 'broad-based' liquidity facilities that are designed to help targeted groups of the largest financial institutions. [22]

While Dodd-Frank has undoubtedly made TBTF bailouts more difficult, the continued existence of these avenues for financial assistance indicates that Dodd-Frank is not likely to prevent future TBTF rescues during episodes of systemic financial distress and market leverage. In effect, both attempts at strict regulation of TBTF instead became directives

regarding the handling of a TBTF resolution regime. [11] Modifying the resolution regime assumes failure and is ex-post. It intended to reduce and reallocate the loss given failure. The remainder of this paper is focused on resolving insolvent large firms ex-ante. We look to metrics that if controlled through policy, may reduce market volatility and extend financial stability.

In choosing metrics to control it is important to realize that targeted legislation will always be vulnerable to the rapid evolution of financial firm practice. Additionally it does not appear that the government is ever truly willing to deliver an ironclad regulation policy that eliminates TBTF once and for all in the face of potential systemic failure. This ex-post stance is reasonable when considering that major financial firm assets are valued at nearer and nearer the per annum gross domestic product.

## 4.2 Can Banking Get Worse?

Despite these large and targeted attempts at regulation and prevention, bank crises are becoming decidedly more complicated and the bailouts larger in magnitude as a result of increasingly complex financial activities. Financial firms have grown into the role of profit generators who quite literally trade for their own benefit, ignoring the client investor, utilizing complex financial derivatives to generate large fractions of their income. [4] Accounting rules enforced by legislation such as FDICIA and Dodd-Frank have rapidly expanded as financial firm assets and liabilities have become more complex. However, financiers working together with lawyers and accountants have increasingly found ways around the intentions of regulators while remaining true to the 'letter of the law.'

The regulator rules have grown more detailed and filled with technical jargon, but still fail to cover every possible circumstance of bad-practice investing; complex leverage positions. The rules have had the unfortunate effect of allowing financial firms to obscure true asset value from the growing pool of average wealth investors. It has become increasingly difficult to gauge the risk and value of the bank's portfolio. This has become a problem not only in financial derivatives and trading, but in areas of basic finance such as mortgage lending.

Both professional and personal investors have begun to see large financial firms as 'black boxes,' and have no interest in investing in their stocks. This crisis of trust calls into serious question these complex practices whose failure could once again place the growth funds, pensions, or retirement funds of ordinary taxpayers in danger.

## 4.3 Is There an Explicit Government Guarantee?

While FDICIA attempted to make it more difficult for the Federal Deposit Insurance Corporation (FDIC) to protect uninsured depositors and creditors at large failing banking organizations and TBTF banking organizations, it is evident that a TBTF doctrine still exists. In fact, one might argue that FDICIA has actually formalized the process for bailing out TBTF

banking organizations by specifically allowing a TBTF bailout when the banking organization's failure is deemed to have serious adverse effects on economic conditions or financial stability. The formal approval process involves a two-thirds vote by the FDIC Board, two-thirds vote by the Federal Reserve Board, approval of the Secretary of the Treasury, and approval of the President of the United States. [3] With this formalized process, "TBTF is now virtually official policy." [1]

In the United States, both the Federal Deposit Insurance Corporation Improvement Act (FDICIA) in 1991 and the Dodd-Frank Act (DFA) in 2010 promised to limit, if not outright eliminate, TBTF in the financial industry. This intent is made clear in the full title of the DFA, "An Act to promote the financial stability of the United States by improving accountability and transparency in the financial system, to end TBTF, to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes...The language in the DFA remains evasive and leads to considerable confusion about whether TBTF has been effectively outlawed or institutionalized in the United States." [11]

After Lehman's failure, Congress passed the Troubled Asset Relief Program (TARP) to funnel hundreds of billions of dollars to support financial firms in a period of extraordinary financial turbulence. In addition, the Federal Reserve Board lent hundreds of billions of dollars to the financial firms through a series of newly created special lending facilities. [1] It seems that the only consistent third party with enough liquidity to buy distressed financial firm assets is the government. The government also maintains through its actions this tendency towards protecting the average American's wealth from the financial services they themselves choose to employ. The government's frequency to act in financial recession, and the increased magnitude of that action is evident in this trend that started in the early 20th century with the Great Depression and the FDIC. The government has built up the reputation that in times of hardship it must step in to protect the wealth of the nation.

In an ex-ante perspective, regulators and the government must diagnose the broad market investing trends that have led to financial firm bailout periods. The regulator and government role should be heavily focussed on pinpointing precarious asset valuation, because leverage in finance can disastrously mix with faulty asset pricing to cause a market wide devaluation process. The government and the american taxpayer continue to be called upon to purchase devalued illiquid assets. Systemic problems are tied to distorted asset prices being used to leverage ever further.

## 5 Wealth and the Paradox of Capitalism

One of the central tenets of capitalism is that the actions of each business in an economic system working for personal gain benefit the economy as a whole. This is the notion that 'greed is good'; each company fights to deliver the best services at the lowest cost in order to generate the highest profits for themselves, and only the most valuable and efficient survive. The size of the profits made by each company are based directly on the value they provide

to the economy, and their employees divide these profits and spend them amongst other businesses in the free market in a continuous feedback loop that seeks to reach an equilibrium of supply and demand that benefits all parties. Capitalism is inherently cutthroat, but ideally this danger becomes its greatest benefit.

The notion of a bank being TBTF represents a divergence from this idea; that the liquidation or fire sale acquisition of a bank operating in the free market that has reached the end of its life should not be tolerated. [1] In these cases the government usually believes that the inevitable loss to depositors and other interconnected parties would be too great and too damaging to the economy as a whole. A pure capitalist would claim that the market correction following the total unassisted failure of a bank would eventually have the most beneficial effect on the economy. This argument tends to lose strength in considering of the potential loss of millions, billions, or trillions in bank assets during a fire sale and the following damage to growth funds, pension funds, and retirement funds that result from assets flooding the market as well as behavioral market selloff in the fear of recession. [11]

During times of prosperity the government should publicly denounce, through public announcement or legislation, liquidity assistance for the most systemic financial firms. Regulators and the government should promote a free and efficient market, discouraging the notion of “implicit backing” that can result in funding advantages, liquidity advantages, and greater mergers of size among the largest financial firms [1] [3] [16] [18].

Nevertheless, once crisis strikes regulators and the government increasingly manage to assist financial firms with liquidity. A pure capitalist would argue that damping these crisis and correction periods results in a weaker economy in the long-term. It is interesting to note that regulator and government focus on short-term stability is becoming increasingly mirrored by the management of the largest financial firms seeking new profits.

Financial firms can incur heavy losses in a single night as a result of new and sensitive derivatives, high frequency trading, and leveraged hedging strategies, that require principles of operation unthinkable in the past. [11] One of the growing principles of operation for these risky maneuvers by financial firms is the existence of a seemingly limitless short-term funding pool. The leverage and hedging strategies are sustained through a heavy reliance on the short-term lending facilities, and the use of commercial paper to meet overnight reserve requirements. [15] These trading practices have resulted from the relentless pursuit of new cash flows that capitalism covets so greatly, making it difficult to criticize them from any standpoint other than the fact that they leave ordinary citizens increasingly exposed to their occasional massive losses [4]. In order to protect the average american, legislation aims to tighten the overnight reserve requirements. [22] This may in effect make the short-term lending markets even more important and systemic to the financial firms seeking to maintain capitalist profits. Legislation will never be able to force profits from the mind of financiers, and the combination of leverage and short-term lending provides for a dangerous option in the minds of those with profitability decisions to make.

The relationship between capitalism and the ordinary taxpayer is becoming strained as the profits of these new tools are increasingly held within the banks while their liabilities become more and more of a public issue. The government would prefer to remain a protector



of the taxpayer when a bank takes a rare and exceptional misstep whose ramifications extend beyond its own clients, this role becomes difficult to fill when the conditions leading to such occasions have become more systemic than extraordinary.

## 6 Inverted Yield Curve

There have been 17 years when there was at least one week with an inverted yield curve: 1927, 1928, 1929 1930, 1959, 1966, 1967, 1968, 1969, 1970, 1973, 1974, 1979, 1980, 1981, 2000, and 2006. [17] Most of those years were associated with tough times in the United States economy. It is generally held that a prolonged inverted yield curve produces a subsequent recession. [17] The rule of thumb is that an inverted yield curve (short rates above long rates) indicates a recession in about a year, and yield curve inversions have preceded each of the last seven recessions. [10] Monetary policy has a significant influence on the yield curve spread and hence on real activity over the next several quarters. [6] A rise in the short rate tends to flatten the yield curve as well as to slow real growth in the near term. The federal funds rate is a simple monetary policy tool that can greatly influence the yield curve.

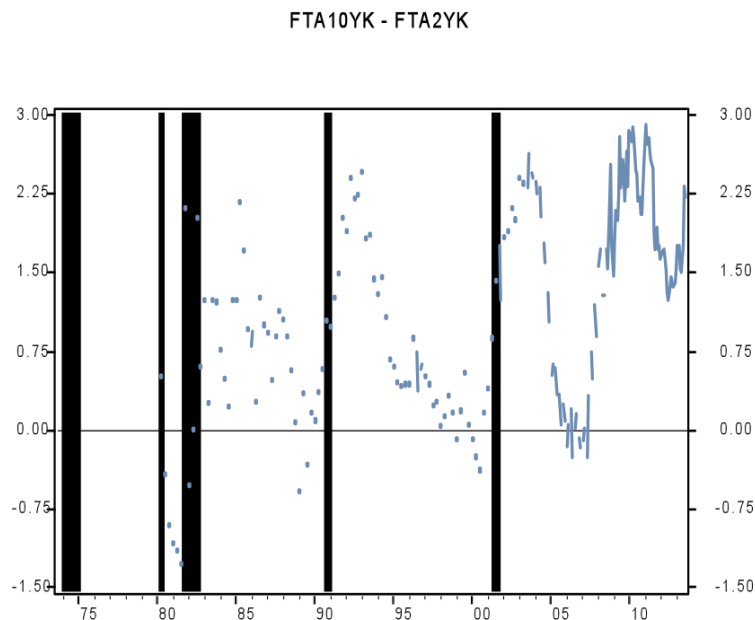


Figure 3: Inverted Treasury Yields: 2 Year and 10 Year

Forecasting recession with the yield curve is quick and simple. Pinpointing the exact cause and severity of recession, requires consideration of more macroeconomic indicators. A simple financial indicator such as the yield curve can be used to double-check both econometric and judgmental predictions, aligning heuristic analysis with indicators of greater detail.

For example, if forecasts from an econometric model and the yield curve agree, confidence in the model's results can be enhanced. [6]

## 6.1 Ripple Effects from Treasury Market

The treasury bill is considered a risk-free asset and is consistently used as the base rate for many fixed income securities. The corporate bond market and the municipal bond market are both intimately related to the rates in the treasury market. Additionally, the maturity that corresponds to a particular treasury rate, is widely used as a predictor of future economic inflation.

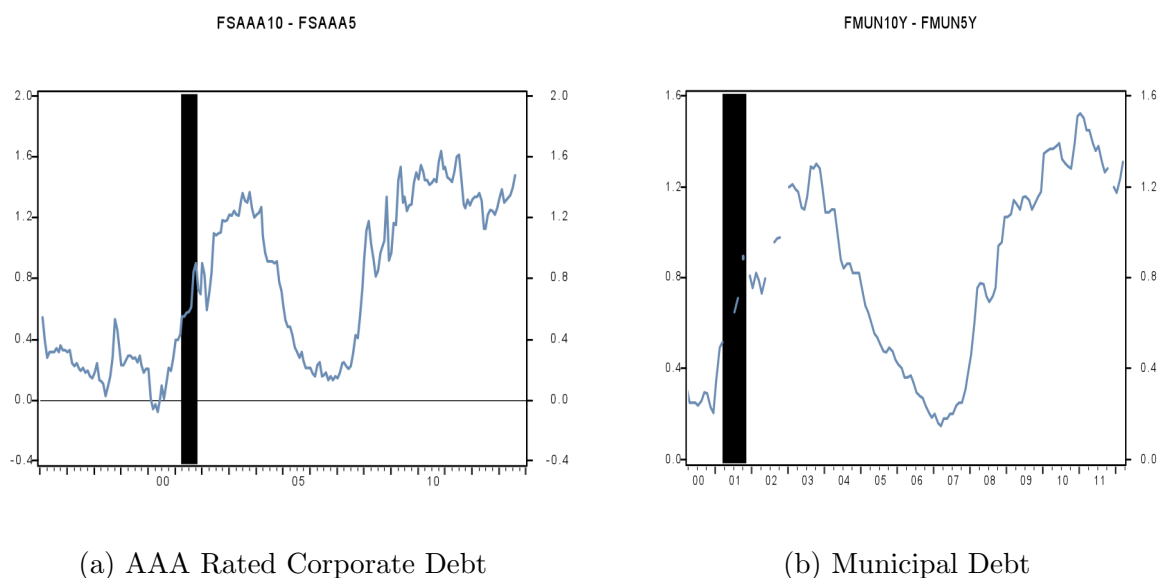


Figure 4: Yield Curves: 5 Year and 10 Year Spread

In figure4 the flattening spread between corporate AAA rated bonds and municipal bonds of 5 and 10 years occurs in the same period as the treasury curve inversion. The treasury spread is a great recession indicator because its inversion is tied closely to the present liquidity risk, and from this liquidity risk presumably is the factor that penetrates into the corporate and municipal bond markets. [9]

## 7 Financial Industry & Market Valuation

### 7.1 Financial Industry Profits Suffer

In the most recent recession, associated with the term 'Financial Crisis,' the world saw extraordinary devaluation of assets. These assets had traded rather efficiently in the financial markets up until the moment the crisis hit. The epicenter of the world financial crisis was distinguishably the financial industry.

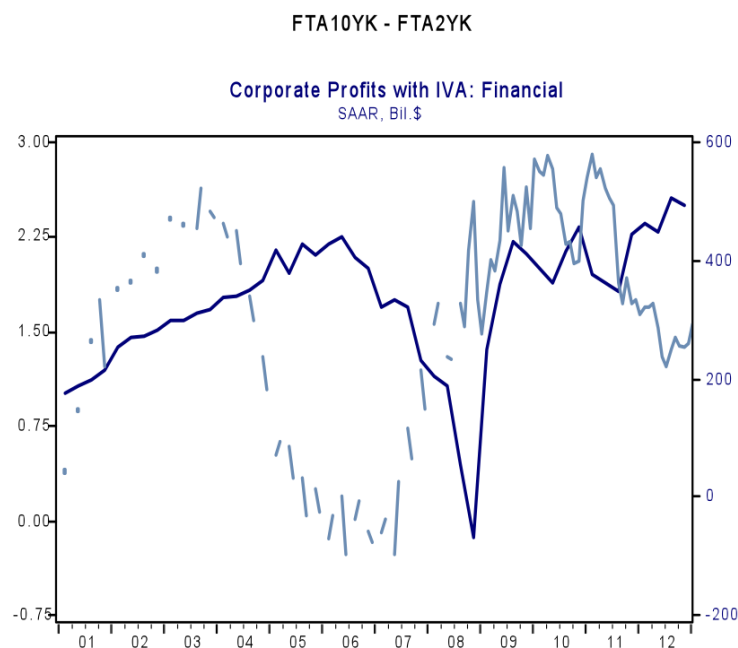


Figure 5: Profits Falling Before the Recession

Figure 5 shows the inverted yield curve, and lagging financial corporate profits. It is important that the financial corporate profits lag the inverted yield, and interestingly the financial corporate profits peak at the deepest inversion treasury curve. In the years leading up to the current financial crisis, banks around the world expanded their balance sheets to increase profitability in an environment of cheap funding. [13] The financial firms did not pull back on investing, even in the face of an inverted yield curve which had prefaced every recession since 1964.

### 7.1.1 Response of Firms

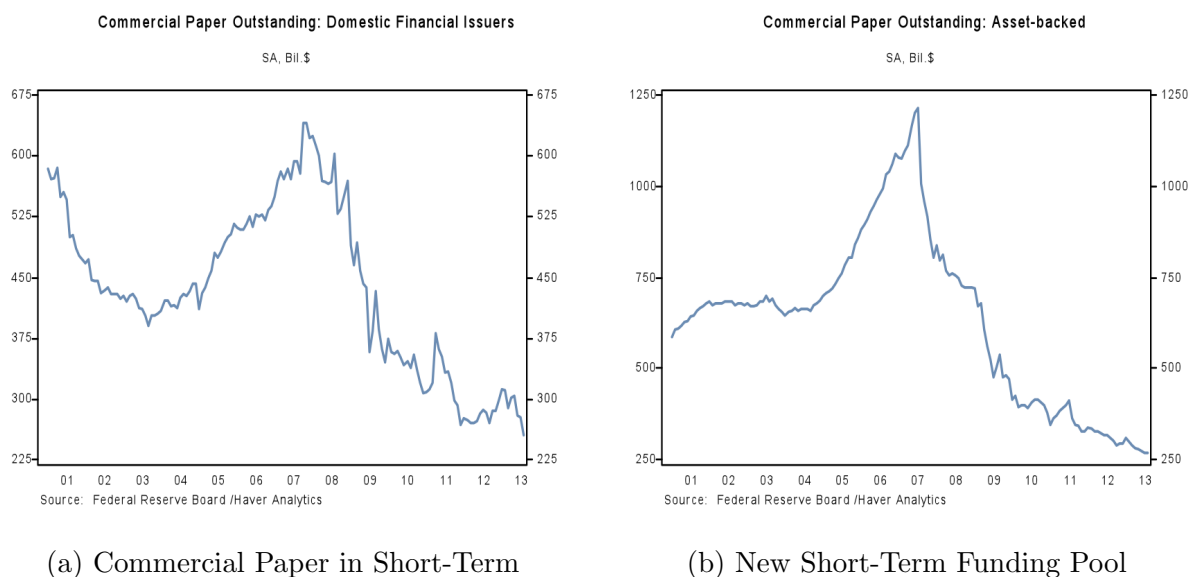


Figure 6: Leverage Funding Before Financial Crisis

These short-term funding markets exist so that private firms can make some interest on excess reserve cash. The private firm holding excess reserve cash, that may want to remain liquid for a period of time, can find other financial firms that need short-term cash to meet overnight requirements. Typically commercial paper, seen in subfigure 6a and subfigure 6b, is lent out with a duration of no more than 270 days. In leveraged investing, short-term funding may be required to meet federal reserve requirements.

Commercial paper that is exchanged without collateral has existed and been used in many tumultuous economic periods. Asset-backed commercial paper was introduced to protect lenders of excess reserves from having a short-term financial firm loan default. The likelihood of this type of financial firm failure, in less than 270 days, has increased with the prevalence of leveraged and hedging investment. Long Term Capital Management was a particularly famous hedge fund that collapsed in a commercial paper maturity period. The build up of outstanding typical commercial paper prior to the 2008 financial crisis (subfigure 6a) was not unlike the build up of outstanding commercial paper before the dot com bubble. Interestingly the quantity of outstanding asset-backed commercial paper (subfigure 6b) exploded prior to the financial crisis of 2008. The correlating peaks of these two short-term lending metrics are indicative of the massive leverage and push for profitability entering the financial crisis.

## 7.2 Short-Term Funding: Greater Leverage in Crisis

Within a margin account the credit balance of the account includes not only the cash remaining in the account, but also proceeds from short sales along with money used to meet margin requirements. The investment manager must hold additional funds in a margin account if the account is being leveraged.

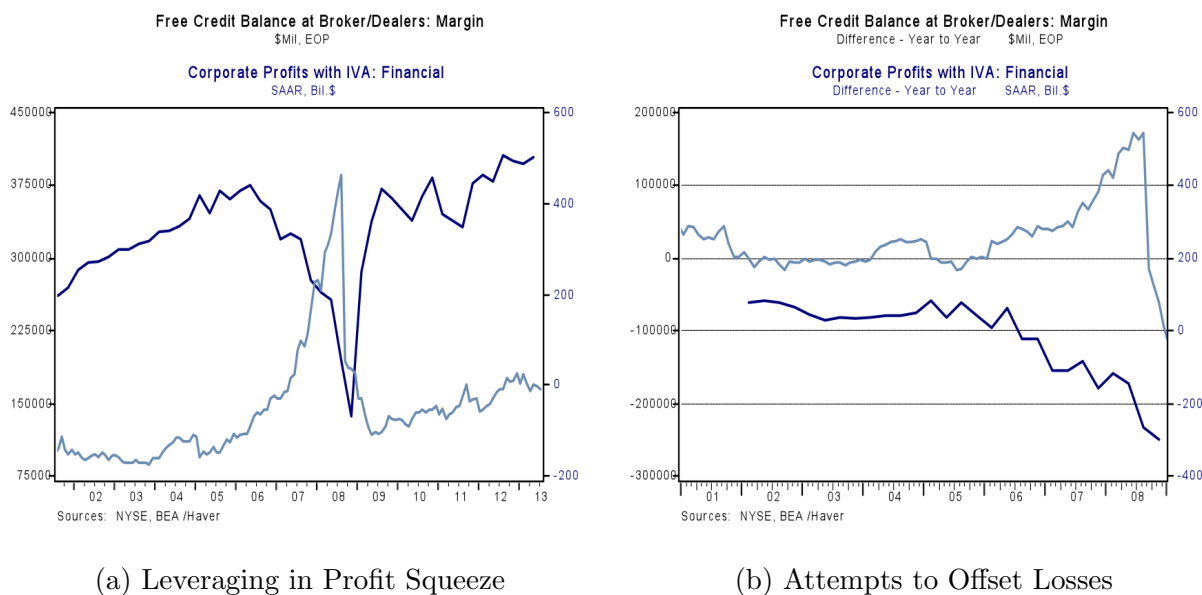
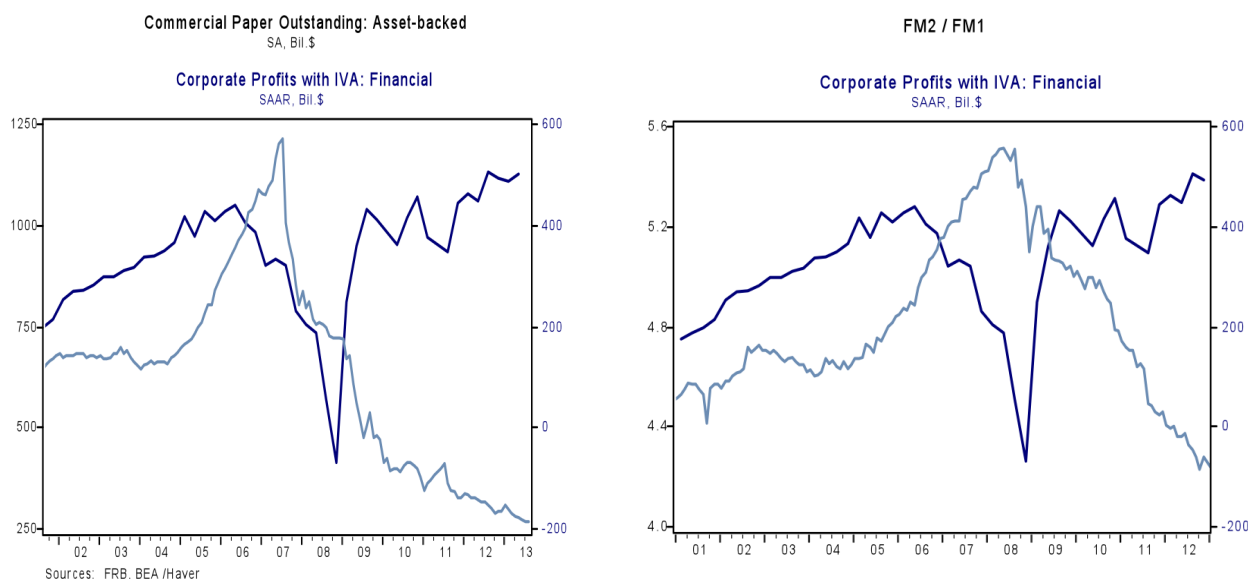


Figure 7: Larger Margin Required in Leveraged Client Accounts

Figure 7 shows the rise of margin accounts within the free credit balance. The growth of margin accounts correlates strongly with the fall of financial corporate profits. Margin accounts support leveraged transactions and if they are growing, so to is the amount of leverage and speculation. Financial firms make their profits from speculation, and their portfolios are often highly risky ... Leverage increases the potential profits of shareholders and fee commissioning financial corporates ... it also increases shareholder's risks: the greater the leverage, the bigger the profit to shareholders and fee commissioning financial corporates if investments are successful, but the bigger the loss to *only* shareholders if investments are not successful. [4]



(a) Increased Volume of Short-Term Lending

(b) Investment Peak: Market Wide

Figure 8: Striving for Profitability

As corporate profits started to reverse their course in 2006, the banks pushed ever harder to maintain an artificially high rate of profit. All the extra leverage helped spike the use of asset-backed commercial paper, and accelerate the growth of M2 with respect to M1 money supply.

Corporate profits are a better illustration of broad investment choices after the repeal of Glass-Steagall. In this financial crisis, leverage was applied to maintain not only client wealth, but to protect and gain for the corporation and its employees. It is not clear whether the treasury curve inversion exacerbated the decline in financial profitability, but the financial market response to push leveraging strategies even harder clearly shook the stability of market assets.

## 8 Conclusions

There were long-term forces at play leading up to the financial crisis of 2008. The trends seen in margin accounts subfigure 9a, is indicative of the rise in investor leverage and the effects of repealing Glass-Steagall. The acceleration of debit balances from 1995 on has driven the divergence of M2 and M1 money supply indicators, and has contributed to the rise of one other major indicator. The bubble in subfigure 9b spans several decades and burst all of a sudden in the financial crisis of 2008. The bubble in subfigure 9b shows the ratio of Financial Company Owned & Managed Receivables to Total Commercial Bank Liabilities. The bubble

is indicative of distorted valuation in financial firm assets. This increases the systemic risk of a massive fire sale of misplaced assets.

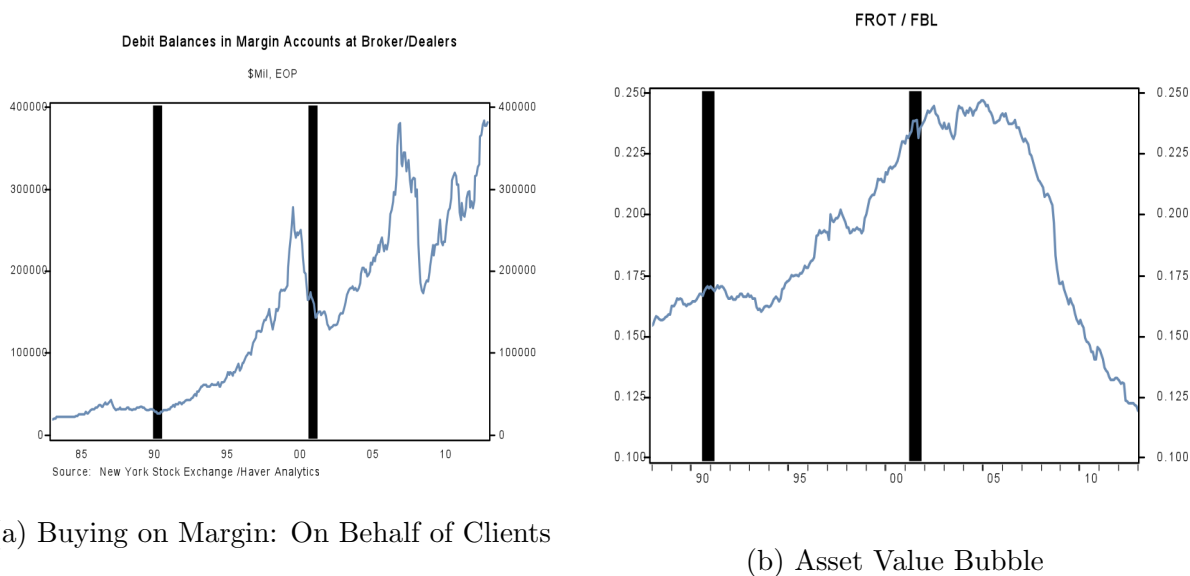


Figure 9: Striving for Profitability

The divergence of M2 from M1 is larger than business cycle recessions, and pertains explicitly to the rise and fall of TBTF as it pertains to financial firms. The financial market for short-term funding will peak in quantity and the rate requested by a lender will spike prior to an economic downturn. The combination of these events precedes unprecedented government intervention, aimed at liquidating financial firm long-term and mis-priced asset positions. The combination of these events is going to continue on an upward long-wave trend as is illustrated by the left most graph in figure 10 below.

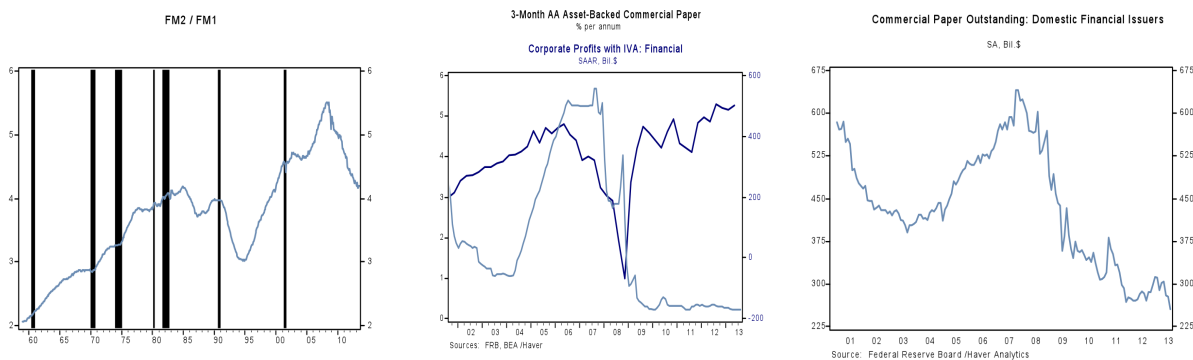


Figure 10: Impending TBTF

We postulate that in inherently leveraged fractional-banking systems the availability of credit and general setting of leverage can tell a lot about the recession to come and the stability in asset prices. The United States economic researchers need to further develop models for this type of recession because the upward market leverage will leave the government responsible as not only the lender of last resort, but the lender of **only** resort.

## 9 Response Mechanisms

The federal reserve is responsible for constraining an out of control economic expansion. The job of the federal reserve is to 'pull away the punch bowl, just when the party is getting good!' The response of the federal reserve to the economic build up in years preceding the financial crisis of 2008, can be seen in the figures below.

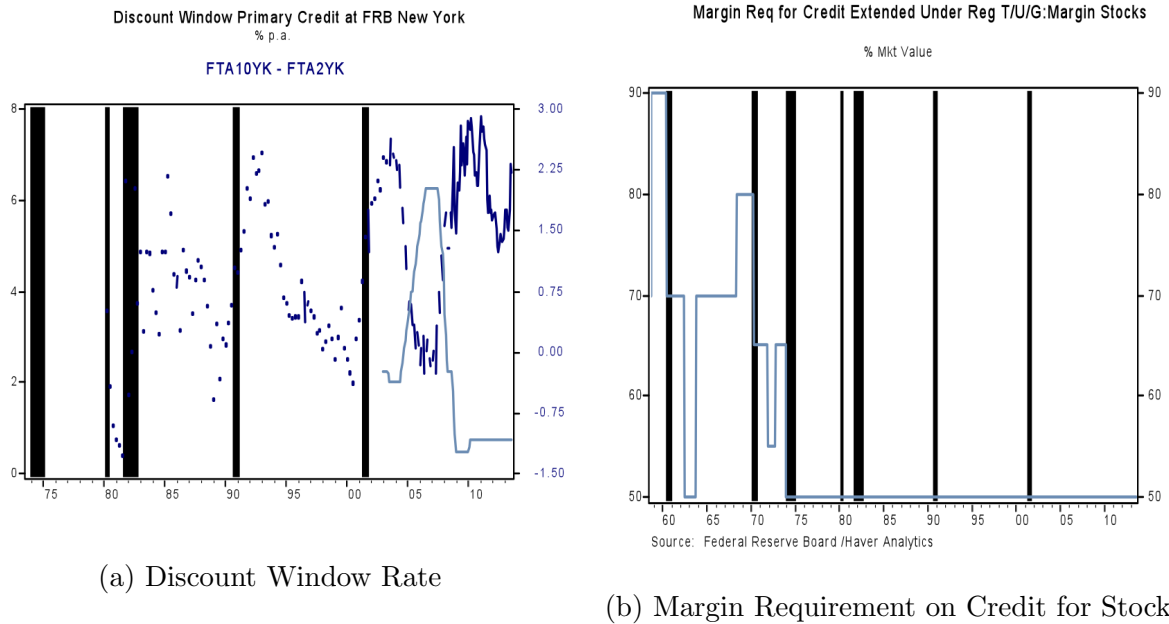


Figure 11: Responses in a Treasury Yield Inversion

There is major disagreement about criteria of policy, varying from emphasis on money market conditions, interest rates, and the quantity of money to the belief that the state of employment itself should be the proximate criterion of policy. [8] Following this line of thought, the execution of discount window primary credit rate hikes by the federal reserve were ill timed. Actions by the federal reserve need to be more targeted in the highly leveraged and unstable economy that had been building prior to the financial crisis of 2008.



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