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# The 2007–2010 U.S. financial crisis: Its origins, progressions, and solutions<sup>☆</sup>

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## ABSTRACT

The 2007–2010 financial crisis was originated from excessive liquidity afforded by low interest rates and active securitization of mortgages and their derivatives. The excess liquidity flowed into the subprime mortgage market until interest rates increased in 2005 and an economic recession followed soon thereafter. The start of a large-scale mortgage market meltdown in 2007 coupled with the 2007–2009 Great Recession caused a severe liquidity freeze. Many financial institutions had to fail and their failures created more uncertainty about the prospect for mortgage market and economic recovery. In an attempt to provide liquidity to the credit market and thus stabilize the economy, various policies were implemented. After revisiting the origins and progressions of the crisis, this paper examines closely three major controversial policy actions: the bankruptcy of Lehman Brothers; the policy reversal from debt purchase to capital purchase under TARP; and the bailout of AIG. After a detailed review of these cases, the paper highlights a few noteworthy solutions to prevent future crises as embedded in the Dodd–Frank Act and then, introduces a few possible solutions for quicker economic recovery that the Dodd–Frank Act overlooked.

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## 1. An inquiry into the origin of the crisis

The St. Louis Federal Reserve Bank starts its financial crisis timeline<sup>2</sup> with the February 27, 2007 announcement made by the Federal Home Loan Mortgage Corporation (Freddie Mac) that it would no longer buy the subprime mortgages and mortgage-related securities. It then lists sequentially the April 2, 2007 filing of Chapter 11 bankruptcy protection by a then-leading subprime mortgage lender, New Century Financial Corporation, and the June 1, 2007 downgrading of many second-lien subprime mortgage bonds by the Standard and Poor's and Moody's Investor Services. Given the series of events listed by the St. Louis Fed and others, the majority opinion seems to identify the subprime mortgage market of the U.S. as the epicenter of the 2007–2010 U.S. financial crisis.<sup>3</sup> Coupled with the recession that began in December 2007, unexpected

<sup>☆</sup> This paper was originally presented at the international conference sponsored by the Athenian Policy Forum, the Deutsche Bundesbank, and the Goethe School of Business, Frankfurt, Germany, on July 29–31, 2010. Since then, many studies on the 2007–2010 financial crisis were published. However, this paper recalibrates, for the benefit of the general public, what caused the crisis, how it progressed and what remedies were implemented for the U.S. economic recovery.

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<sup>1</sup> Associate Professor of Economics. I would like to thank anonymous referees for their comments. All remaining errors are, however, mine.

<sup>2</sup> See <http://timeline.stlouisfed.org/index.cfm?p=timeline>. Also, French et al. (2010, p. 3) states that the first symptoms of the world financial crisis appeared in the summer of 2007.

<sup>3</sup> There is no uniformly agreed name for the recent financial crisis that occurred since 2007. It is often identified with the Great Recession, the subprime mortgage melt-down, the 2008–2009 financial crisis, etc. However, I wished to call it the 2007–2010 financial crisis because the Great Recession began in 2007, coinciding with the start of housing meltdown, and its impact was still too strong to be ignored in 2010 when the Dodd–Frank Act was passed.

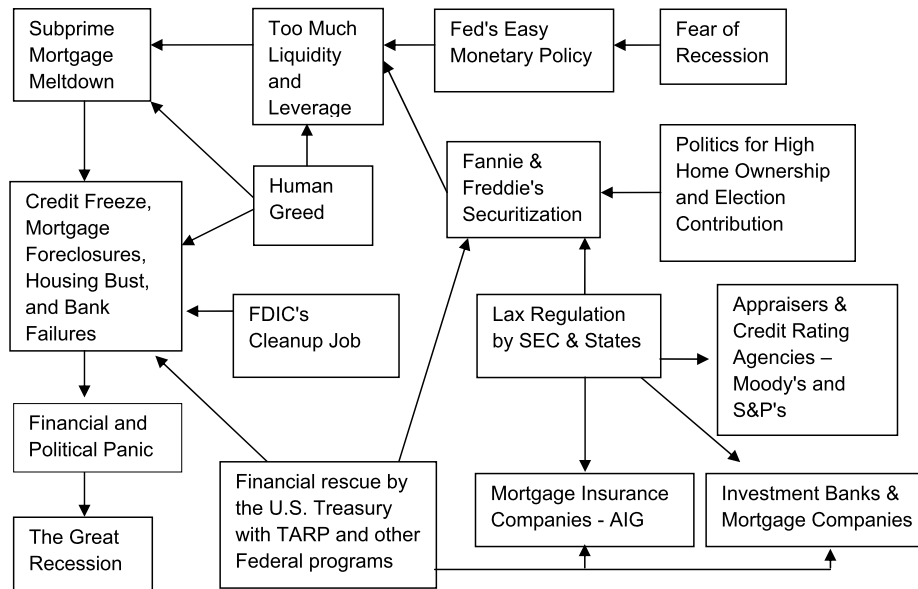


Chart 1. The story of the great recession.

rapid defaults by mortgage borrowers had accelerated the deterioration of mortgage market and consequently, the balance sheet of many financial institutions which lent heavily to the real estate sector. Faced with a large-scale credit crunch and many bank failures thereof, the U.S. government had to step in to rescue financial institutions as well as recession-impacted businesses.

The main reason why the mortgage market became the epicenter of the crisis is due to the excessive liquidity that was available in the real estate market.<sup>4</sup> As shown in Chart 1, the first of the two reasons for the excessive liquidity owes much to the easy monetary policy the Federal Reserve Banking System accommodated between September 2001 and May 2005 when the federal funds rates were kept below 3%. The second reason can be attributed to the securitization afforded by Fannie Mae and Freddie Mac as advocated by [Eyzaguirre and Bayoumi \(2009\)](#).<sup>5</sup> Their eagerness to securitize mortgages no doubt reflected their profit-seeking motivation. More importantly, however, they were eager to meet the implicit demand of politicians who were in favor of affordable housing programs. [Rajan \(2010, p. 7\)](#), for example, lists the U.S. domestic political stresses as one of the many fault lines that created the financial crisis.<sup>6</sup> A modern version of crony capitalism was also present in the form of election fund contributions for an implicit government guarantee for their existence ([Choi & Kim, 2009, pp. 103–111](#)). The fuel that sustained and encouraged the growth of securitization was the lax regulation exercised by the Securities and Exchange Commission (SEC). The role played by “animal spirits,” as mentioned by [Kaletsky \(2010, p. 27\)](#), in creating or accelerating a crisis could not be ignored. Coupled with this idea, [Kolb \(2010\)](#) presents the case of a distorted incentive system that propagated the originate-to-distribute model excessively. [Wessel \(2009, p. 54\)](#), however, lists all of these plus many more as sources of blame for bringing about a financial crisis in the U.S.

The inadequate supervision of the credit rating agencies such as Moody’s and Standard and Poor’s gave a wrong stamp of approval to badly packaged securities. Many home appraisers who inflated home values were not properly supervised by state governments, either. The greed-driven no-doc mortgages issued by various mortgage companies such as the Countrywide Financial Corporation and Wachovia were not questioned by the Securities and Exchange Commission (SEC) and various state governments. Mortgage insurance companies such as AIG, MBIA and Ambac Financial Group had issued too many credit default swaps which escaped the regulatory supervision of the SEC and state governments. If the SEC had a better control of the mortgage brokerage and financing companies, mortgage-derivatives insurance companies, investment banks, etc., the severity of the crisis might not have been that widespread and deep.

<sup>4</sup> [French et al. \(2010, pp. 26–29\)](#) lists many contributing factors to the 2007–2010 financial crisis. However, no attempt was made to identify the linkage between excessive liquidity and real estate market melt-down, for example. Also, [Walker \(2009\)](#) makes a strong case that huge U.S. fiscal deficits will burden future generations. However, he does not suggest a direct connection between deficits and the 2007–2010 crisis. One of the best overviews of the crisis origin and progress is found in an Academy Award winning movie, “Inside Job,” directed by Charles H. Ferguson in 2010.

<sup>5</sup> [Sorkin \(2009, pp. 89–90\)](#) mentions the difficulty of understanding a collateralized debt obligation (CDO) by prominent people including Alan Greenspan, the then Chairman of the Federal Reserve Board.

<sup>6</sup> [Rajan \(2010\)](#) further identifies the trade imbalances and a financial system that backs the trade imbalances. He also details additional causes of the financial crisis: Among them, the indebtedness of American consumers to the world as the most fundamental one.

**Table 1**

Mergers and mergees of major financial institutions in 2008.

Merger announced	Merger	Merger	Merger completed
January 11, 2008	Bank of America	Countrywide	June 5, 2008
March 16, 2008	JP Morgan	Bear Stearns	March 16, 2008
June 2, 2008	Wells Fargo	Wachovia	October 3, 2008
July 11, 2008	FDIC	Indy Mac	July 11, 2008
September 6, 2008	FHFA	Fannie & Freddie	September 6, 2008
September 14, 2008	Bank of America	Merrill Lynch	September 15, 2008
September 15, 2008	Bankruptcy Court	Lehman	September 15, 2008
September 24, 2008	JP Morgan	Washington Mutual	September 24, 2008
October 24, 2008	PNC Group	National City Bank	October 24, 2008

Even though the excessive liquidity found in the mortgage market can be attributed to the Fed's easy monetary policy<sup>7</sup> and the lax regulation on securitization, the role played by simple human greed cannot escape its share of blame.<sup>8</sup> When interest rates were low between 2001 and 2005, many people saw an opportunity to own their own homes. At the same time, many investors who were not satisfied with small sums of interest earned at banks opted for a higher return on their money at a higher risk. They refrained deposits with banks and instead, pursued real estate investment by justifying that it was traditionally safer investment than stocks and bonds. Coupled with a \$250,000 non-taxable gain afforded by the Tax Relief Act of 1997<sup>9</sup> and the demand by wishful homeowners, the price of real estate increased every year. Many shrewd investors saw a profitable opportunity in the housing market by flipping homes every two years.<sup>10</sup> They did not care to read the terms of borrowing for they did not intend to keep the mortgage for long. When the federal funds rate was gradually and continuously increased by the Fed up to June 2006, reaching 5%, the housing market and the economy experienced a slow-down. When the direction of the interest rate movement was reversed toward lower rates in September 2007, it was too late for the housing market and the economy to turn around. The housing bubble had burst.

The rapidly deteriorating housing market brought havoc to the balance sheet of many financial institutions. Especially, the large commercial banks and the sophisticated investment banks that were heavily involved with trading mortgages and mortgage-related derivatives were hit hard by a wave of illiquidity caused by uncertainty about the financial market in general. Starting with the bank run at Indy Mac Bank in July 2007, the crisis reached its zenith in 2008. Table 1 summarizes major financial institutions that were merged, bankrupt, or conserved by other entities in 2008.

Starting with the merger of Bank of America and Countrywide Financial Corporation in January 2008, the pace of merger quickened in September 2008. Consequently, three large investment banks – Bear Stearns, Merrill Lynch, and Lehman Brothers – had disappeared in 2008. The most important event, however, had taken place on September 15, 2008, when Lehman Brothers was left to file a bankruptcy whereas Merrill Lynch were allowed to be bought out by Bank of America and the AIG was rescued by the Federal Reserve Bank at the initial cost of \$85 billion. The Lehman bankruptcy filing caused some money market funds to break the buck and created a major uncertainty in the short-term debt market. Consequently, the pace of deterioration in short-term financing market accelerated and the government rescue packages were sent out in full force.

Under immense pressure, Congress passed at the second attempt the Emergency Economic Stabilization Act of 2008 on October 3, 2008, which gave a birth to the \$700+ billion Troubled Assets Relief Program (TARP). Equipped with this new tool, the U.S. Treasury began to dole out rescue funding to financial institutions. As Table 2 shows, the U.S. Treasury and the Federal Reserve Board (Fed) were busy injecting liquidity into financial institutions during October and November 2008.<sup>11</sup> While the U.S. Treasury was concentrating on long-term rescue programs, the Fed was busy satisfying the short-term financing need of many financial institutions by giving them short-term loans. Not all of these programs were the direct response to the Lehman failure; however, the variety of the programs clearly showed the urgent need felt by government bureaucrats and policy makers to contain the spread of fear throughout the economy. For example, the Fed's action to allow commercial paper and asset-backed securities of individual firms as collaterals to borrow from it was unprecedented.

Despite these efforts, the recession deepened in December 2008 and threatened the existence of many well-known American businesses such as the three Detroit automobile companies. They were asking for a rescue funding along with many others. The scent of free money available via the TARP was spreading quickly throughout the U.S. economy. However, the Bush administration was running out of time to spend the money and it was now the Obama administration's turn to continue the rescue program when Mr. Obama was sworn in on January 20, 2009.

The first major action the Obama administration took toward rescuing the troubled financial market was to sign into law the \$789 billion American Reinvestment and Recovery Act of 2009 on February 17, 2009. When adding the \$350 billion

<sup>7</sup> See Wessel (2009, p. 55).

<sup>8</sup> See Conrad (2012, pp. 72–110) to understand the role of incentives in creating good and bad impacts to the society.

<sup>9</sup> This law allowed a non-taxable gain of up to \$250,000 per person from a sale of a principal residence. See: <http://www.bankrate.com/finance/real-estate/capital-gains-home-sale-tax-break-a-boon-for-owners-1.aspx>.

<sup>10</sup> See Lee and Choi (2011) for the role played by house flippers on housing prices.

<sup>11</sup> Other Federal Reserve Board programs such as the Term Auction Facility which began in December 2007 and the Term Securities Lending Facility of March 11, 2008, were not included because they do not reflect the impact of the Lehman bankruptcy.

**Table 2**

Various financial rescue programs of the U.S. treasury and the fed during October and November, 2008.

Start date of program	Agency in action	Program name
9/19/2008	Fed	Money market fund liquidity facility
10/3/2008	Treasury	Troubled asset relief program
10/6/2008	Fed	Interest on excess reserves
10/7/2008	Fed	Commercial paper funding facility
10/21/2008	Fed	Money market investor funding facility
11/14/2008	Treasury	Capital Purchase program
11/22/2008	Treasury	Temporary liquidity guarantee program
11/25/2008	Fed	Term asset-backed securities loan facility

Source: [http://www.newyorkfed.org/markets/Forms\\_of\\_Fed\\_Lending.pdf](http://www.newyorkfed.org/markets/Forms_of_Fed_Lending.pdf) and reported in Choi (2012).**Table 3**

Major economic stimulus legislations in 2008 and 2009.

Name of legislation	Effective date	Purpose
Economic stimulus act of 2008	2/13/2008	To stimulate the economy by giving a tax refund of \$168 billion
Emergency economic stabilization act of 2008	10/3/2008	To provide \$700 billion financial aids to financial institutions
American recovery and reinvestment act of 2009	2/17/2009	To spend \$787 billion to rejuvenate economy and help mortgage borrowers

left-over fund from the Bush administration under the Emergency Economic Stabilization Act of 2008, the Obama administration now had over \$1.1 trillion to rescue the ailing U.S. economy and financial markets. The new dilemma was not being able to secure enough public funds but how to use it to secure the stability in the economy and financial markets.

The Obama administration began formulating various policy tools to rescue the economy and financial markets. The following sections examine various players and types of policy tools implemented and their impacts on the U.S. financial market and economy under the Obama Administration.

## 2. Players and types of policies implemented

The 2007–2010 financial crisis is clearly the worst economic and financial debacle since the Great Depression of 1930s. In order to dig out of this crisis, many government agencies chipped in with various policy measures. As Table 3 shows, three major economic stimulus packages, grossing more than \$1.6 trillion<sup>12</sup> in value, were instituted within one year and yet, their impact on the economy has been slow to come.

In fact, the debate on the size of the expenditure multipliers from these stimuli is ongoing and hard to pin down. The studies by Blanchard and Perotti (2002) and Mountford and Uhlig (2005) show the government expenditure multiplier to be less than 1 within 1 year of implementation. Therefore, it might have been too early to expect in 2010 and a few years thereafter a major improvement in the economic and financial conditions from these stimuli. However, many additional policy measures were taken to alleviate and improve the financial condition, if not the economic condition.

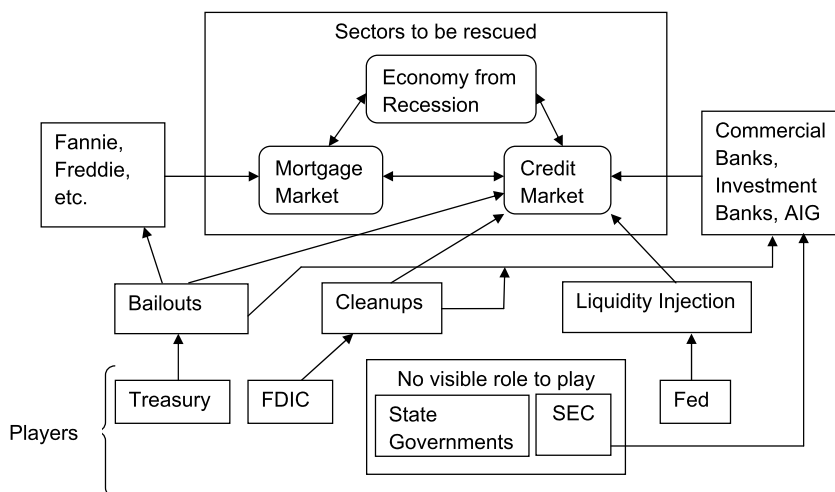
In addition to the legislature, there were many governmental entities that produced various regulations that were to help the financial rescue efforts. Chart 2 shows these major government entities at work. Given that the objective of the rescue was to be out of an economic recession, the issues in the mortgage market and the credit market needed to be resolved first. The growing default rate on mortgages caused the deterioration of balance sheets of mortgage financiers such as Fannie Mae and Freddie Mac along with many large financial institutions. There were 3 agencies (Treasury, FDIC, and the Fed) that played a very active role and 2 agencies (State governments and SEC) that did not.

First, the U.S. Treasury had to inject rescue funds to bail out financial institutions in order to stabilize the mortgage and credit markets as the action taken by each of the government agencies is shown in Chart 2. The increasing mortgage default rate worsened the commercial and investment banks' balance sheets as well. The banks such as Citigroup, Bank of America, Wells Fargo, J.P. Morgan-Chase, etc. all had a growing volume of non-performing residential and commercial loans, which lowered their capital ratios below the regulator's acceptable rate.<sup>13</sup>

Second, when commercial banks' capital ratio falls below the threshold level of 4%, the Federal Deposit Insurance Corporation (FDIC) does its cleanup duty by taking the banks over or selling them to other healthier banks. Of course, the FDIC warns the troubled bank to raise its capital ratio up to an acceptable level before it forces the sale of its assets and operations. This cleanup work of the FDIC is intended to keep the health of the financial institutions transparent and honest. The U.S. Treasury helped greatly in injecting capital into many small and large banks such as Citigroup, JP Morgan Chase, Bank of America, Wells Fargo, etc. via the TARP.

<sup>12</sup> As of June 25, 2010, about 53% of the \$787 billion was spent per information on [www.recovery.gov](http://www.recovery.gov). However, the total amount was increased to \$840 billion under the American Recovery and Reinvestment Act and the 2012 President's budget. The total tax benefits of \$290.7 billion, grants and loans of \$257.8 billion, and entitlements of \$254.6 billion were given out. Thus, \$803.1 billion out of \$840 billion was spent (<http://www.recovery.gov/Transparency/fundingoverview/Pages/fundingbreakdown.aspx>).

<sup>13</sup> A healthy level of a capital-to asset ratio is 8%.



**Chart 2.** Major federal government players and their main objectives.

Third, the Federal Reserve Banking System (Fed) has the exclusive privilege and responsibility of providing liquidity to these institutions, especially in a financial crisis. In fact, during the 2007–2010 crisis, the Fed produced many new tools with which to inject liquidity into the ailing financial sector. Some examples of them are the term auction facility, primary dealer credit facility, term securities lending facility, money market fund liquidity facility, commercial paper funding facility, money market investor funding facility, and term asset-backed securities loan facility. Via these short-term programs, the Fed injected over \$1 trillion into the financial sector. In fact, it has been continuously providing the liquidity of \$85 billion each month since 2012 under the Quantitative Easing (QE) program, making the Fed's balance sheet to balloon more than three-folds.<sup>14</sup>

Strangely enough, however, the other important regulators – namely, the Securities and Exchange Commission (SEC) and various state governments – who have the right to regulate mortgage companies, insurance companies, state-chartered banks, all publically listed companies, etc. were absent in formulating effective rescue programs. They were in most part not heard.<sup>15</sup> In fact, the lack of supervision on credit rating companies by the SEC, for example, made the SEC look ineffective and immaterial in formulating a current and future regulatory decision. Furthermore, there were some major controversial policies that hampered the financial market recovery, if not harmed it.

### 3. Major controversial policies

Among many controversial policies that various government agencies pursued during the 2007–2010 financial crisis, three major ones are examined herein.<sup>16</sup>

#### 3.1. The bankruptcy of Lehman Brothers<sup>17</sup>

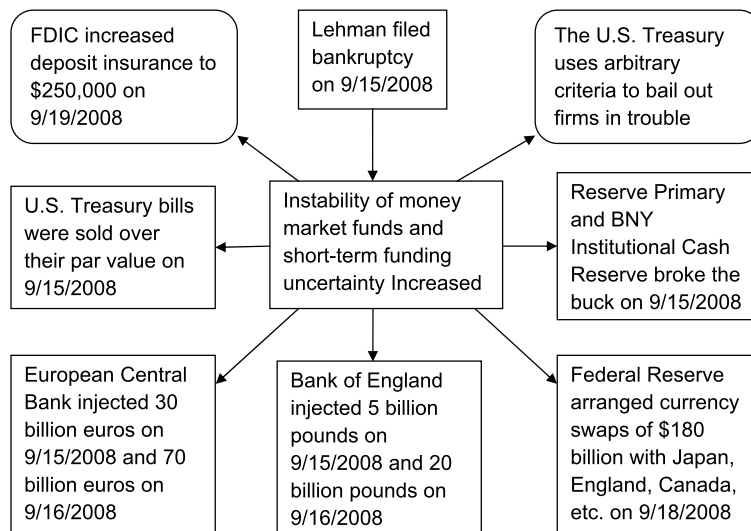
The U.S. Treasury's decision to have Lehman Brothers to file a bankruptcy on September 15, 2008, was a major mistake in retrospect. It immensely increased the level of uncertainty throughout the financial market, causing an extremely tight credit condition and thus, the disruption of normal money market operation. Some money market funds such as Reserve Primary and BNY Institutional Cash Reserve broke the buck due to their loss in the Lehman investment. The U.S. Treasury bills were sold at times over par, yielding a negative interest rate. Approximately \$100 billion was withdrawn from the money market accounts on September 17, 2008, alone. As shown in [Chart 3](#), the U.S. and European central banks were busy assuring the market by making a total short-term fund of about \$366 billion available to their respective financial markets between September 15 and 18, 2008.

<sup>14</sup> The Fed normally held less than \$800 billion worth of Treasury notes prior to 2008. However, since then, the Fed's holding of Treasuries, mortgage-backed securities, bank debt, etc. has grown and exceeded \$2.6 trillion in December 2012. The QE is still in effect in November 2013.

<sup>15</sup> The SEC instituted a ban on short-selling of selected financial stocks in September 2008 in order to slow down the rapidly declining price trend. However, it brought its own controversy and was viewed not so effective.

<sup>16</sup> For example, the ban on short sale by the SEC in September 2008 was an important attempt to stall the declining stock market. However, its effectiveness is not large enough to affect the overall recovery of the financial market and thus, not included in the discussion.

<sup>17</sup> A detailed description of the Lehman collapse can be found in the work of [McDonald and Robinson \(2009\)](#). Also, [Kaletsky \(2010, pp. 128–155\)](#) devotes a full chapter on the Lehman collapse and reasons why the Lehman default allowed by then U.S. Treasury secretary, Hank Paulson, was a mistake that made the crisis worse.



**Chart 3.** The consequence of Lehman Brothers' bankruptcy.

What is truly startling about the Lehman bankruptcy is the opaque decision criteria used by the Treasury and the Fed. These government offices approved the sale of Merrill Lynch to Bank of America and the bankruptcy of Lehman on September 15, 2008 but injected an \$85 billion rescue fund into American International Group (AIG) on September 16, 2008, without any public explanation.<sup>18</sup> This somewhat unexplainable decision made by the government added more uncertainty to the fragile credit market.

The importance of calming the short-term credit market became apparent when the Congress increased the FDIC deposit insurance limit to \$250,000 from \$100,000 on October 3, 2008 when it passed the Emergency Economic Stabilization Act of 2008. This increase was to be effective until December 31, 2010.<sup>19</sup> While the depositors benefited from the increased coverage, the depository institutions had to bear the cost in the form of an increased insurance premium. The FDIC approved on October 7, 2008, that the deposit insurance premium on average be increased to 13.5 cents from 6.3 cents per \$100 deposit in 2009.<sup>20</sup> In May 2009, the FDIC assessed additional 5 cents per \$100 deposit insurance premium on top of the already increased premium. Because many depository institutions were failing during this period, the FDIC was low in its deposit insurance fund and thus, resorted to collecting the 3-years' worth deposit insurance premium upfront.<sup>21</sup> The collection of this 3-year prepayment of deposit insurance premium was expected to generate about \$46 billion, which was still not adequate in light of the dwindling FDIC insurance fund. Instead of this, FDIC could have gone to the U.S. Treasury for an emergency funding and relieved member-banks of extra funding demand.

The FDIC decision to collect the deposit insurance premium upfront to honor the newly increased deposit insurance limit of \$250,000 put healthy small community banks at a serious disadvantage. First, this action helped large and weak banks not to lose deposits and in fact cannibalize smaller banks' deposits. In normal times when large depositors with a deposit balance more than \$100,000 learn of the unhealthy status of a bank, they would withdraw their deposits and move them to other healthier institutions. However, when the insured limit is increased to \$250,000, their deposits are secure up to that limit and thus, need not withdraw and move to another bank. What was worse was the fact that many large but weak banks decided to attract more deposits by paying higher deposit rates than small but strong banks. Therefore, many small community banks faced a new battle of keeping their large depositors in and not losing deposits to cross-town large banks.

Second, the prepayment order made by the FDIC was in large part to protect its reputation and political value at the expense of its customer-member banks. Of course, the FDIC action protected and ensured its safety and soundness. However, by collecting the prepaid premium upfront, the FDIC forced its member banks to use up valuable reserves that could have been loaned out in time of tight credit condition.<sup>22</sup> Instead of collecting premium prepayment, the FDIC could have

<sup>18</sup> It was rumored in the media that the then-Treasury Secretary Hank Paulson did not favor Lehman's rescue for personal reasons stemming from his Goldman Sachs' days.

<sup>19</sup> This limit was further extended to December 31, 2013 under the Helping Families Save Their Homes Act signed by President Obama on May 20, 2009. This policy limit of \$250,000 per account owner became permanent on July 21, 2010, when the Dodd-Frank Act was signed into law.

<sup>20</sup> The FDIC had to increase the premium to bring its deposit insurance fund closer to the legally mandated limit of 1.15% of the \$4.8 trillion deposit then held at the depository institutions.

<sup>21</sup> This prepaid insurance premium was to cover up to 2012.

<sup>22</sup> If the expected total prepayment of \$46 billion is coupled with a simple deposit multiplier of 5, for example, it would have increased money supply by possibly over \$200 billion.

**Table 4**

The open, high, low and close of daily Dow Jones industrial average between September 22 and October 10, 2008.

Date	Open	High	Low	Close	Intra-day range	Inter-day spread
9/22/2008	11 394.42	11 450.81	10 956.43	11 015.69	494.38	−372.75
9/23/2008	11 015.69	11 214.65	10 763.77	10 854.17	450.88	−161.52
9/24/2008	10 850.02	11 041.02	10 696.38	10 825.17	344.64	−29
9/25/2008	10 827.17	11 206.05	10 799.77	11 022.06	406.28	196.89
9/26/2008	11 019.04	11 218.48	10 781.37	11 143.13	437.11	121.07
Daily average for 5 days (9/22–9/26/08) =					<b>426.66</b>	<b>−49.06</b>
<b>9/29/2008</b>	<b>11 139.62</b>	<b>11 139.62</b>	<b>10 266.76</b>	<b>10 365.45</b>	<b>872.86</b>	<b>−777.68</b>
9/30/2008	10 371.58	10 922.03	10 371.58	10 850.66	550.45	485.21
<b>10/1/2008</b>	<b>10 847.4</b>	<b>11 022.06</b>	<b>10 495.99</b>	<b>10 831.07</b>	<b>526.07</b>	<b>−19.59</b>
10/2/2008	10 825.54	10 843.1	10 368.08	10 482.85	475.02	−348.22
<b>10/3/2008</b>	<b>10 483.96</b>	<b>10 844.69</b>	<b>10 261.75</b>	<b>10 325.38</b>	<b>582.94</b>	<b>−157.47</b>
10/6/2008	10 322.52	10 322.52	9503.1	9955.5	819.42	−369.88
10/7/2008	9955.42	10 205.04	9391.67	9447.11	813.37	−508.39
10/8/2008	9437.23	9778.04	9042.97	9258.1	735.07	−189.01
10/9/2008	9261.69	9522.77	8523.27	8579.19	999.5	−678.91
10/10/2008	8568.67	8989.13	7773.71	8451.19	1215.42	−128
Daily average for 5 days (10/6–10/10/08) =					<b>916.56</b>	<b>−374.84</b>

Source: Author's calculation based on data obtained from <http://finance.yahoo.com>.

borrowed the sum from the U.S. Treasury for an emergency basis. In fact, if it was willing to take this avenue, it could have handled the closure of larger banks such as Citigroup, thus, eliminating the myth of “too big to fail” for good.

All in all, the Lehman failure almost brought about a near-total collapse of the short-term financing market and required many emergency actions by domestic and international government agencies to stabilize and rescue the market from a total collapse. Perhaps, the rescue, not a bankruptcy, of Lehman Brothers might have calmed the fragile financial market from experiencing a near collapse.

### 3.2. The policy reversal: debt purchase vs. capital purchase

The next example of a major controversial policy can be found in the passage of the Emergency Economic Stabilization Act (EESA) of 2008, better known as the Troubled Assets Relief Program (TARP), and during its implementation stage. The idea of a major government bailout of financial firms began floating around on September 19, 2008, in the same week of the Lehman bankruptcy. When the bill was emerged as a \$700 billion bad-debt purchasing program and put to the vote before the U.S. House of Representatives on September 29, 2008, it was defeated by a vote of 205 to 228. The stock market, as reflected in the Dow Jones Industrial Average, reacted violently by falling 777 points<sup>23</sup> as shown in Table 4. When the Senate passed a modified bill by a vote of 74 to 25 on October 1, 2008, the market did not show much enthusiasm. When the bill was finally passed by the House with a vote of 263 to 171 and became the EESA of 2008 on October 3, 2008, the stock market seemed to show a strong disapproval by rapidly declining, instead of rising up. The declines of −369.88 points and −508.39 points on October 6 and 7, 2008, respectively, showed an accelerated pace of disapproval and increased uncertainty about the market recovery possibility.

Table 4 shows that the daily average intra-day range<sup>24</sup> for the 5 days before September 29, 2008, was 426.66 points and the same for the inter-day spread<sup>25</sup> was −49.06 points. However, the same 5-day averages for the intra-day range and the inter-day spread after October 3, 2008, showed 916.56 and −374.84, respectively. That is, the intra-day range after the passage of the EESA was more than two times larger while the inter-day spread was more than 7 times larger than those observed before the passage of the EESA. The total decline in the Dow Jones Industrial Average during the 5 days after the close of October 3, 2008, was 1874.19 which was a more than 18% decline in one week.

Furthermore, the credit market showed its share of disapproval as well. The TED spread,<sup>26</sup> being a measure of uncertainty and default risk, recorded the widest difference of over 3.5% in 26 years on September 29, 2008. It was clear that the passage of the EESA did not convince tax payers and investors that the TARP in the EESA will alleviate the financial crisis soon.<sup>27</sup> The reason for this skepticism was soon verified when a major policy reversal was announced by the U.S. Treasury Secretary.

When the EESA of 2008 was passed, it authorized the U.S. Treasury Secretary to establish the Troubled Assets Relief Program (TARP) to purchase troubled assets from financial institutions. At the same time, the Treasury Secretary is required

<sup>23</sup> The Standard & Poor's 500 stock index lost 8.8% the same day and it had the worst loss since Black Monday of 1987. The NASDAQ composite index also experienced its worst day since Black Monday, losing 9.1%.

<sup>24</sup> An intra-day range is defined as the highest minus the lowest Dow Jones Industrial Average (DJIA) observed on the same day.

<sup>25</sup> An inter-day spread is the difference of today's closing DJIA minus yesterday's closing DJIA.

<sup>26</sup> The TED spread is the difference between a 3-month Eurodollar rate and a 3-month U.S. Treasury-Bill rate. The larger the TED spread, the larger the risk of default and uncertainty in the financing market.

<sup>27</sup> The EESA is in fact comprised of 3 divisions: Division A is the Emergency Economic Stabilization Act of 2008; Division B is the Energy Improvement and Extension Act of 2008; and Division C is the Tax Extenders and Alternative Minimum Tax Relief Act of 2008. However, only Division A is considered in this paper.



**Table 5**

A comparison of the capital purchase program terms among different types of bank organizations.

	Public company	C-corporation	S-corporation
Terms released	10/14/2008	11/17/2008	1/14/2009
Instrument used	Preferred stock	Preferred stock	Senior debt
Dividend rate for first 5 years	5%	5%	7.7%
Dividend rate from 6th year	9%	9%	13.8%
Maturity	Perpetual life	Perpetual life	30 years
Application deadline	11/14/2008	12/8/2008	2/13/2009
Warrant	15% of investment	15% of investment	5% of investment
Warrant maturity	10 years	10 years	10 years
Pay-back condition	After 3rd year unless approved by U.S. Treasury	After 3rd year unless approved by U.S. Treasury	After 3rd year unless approved by U.S. Treasury
Executive pay	Controlled by Treasury	Controlled by Treasury	Controlled by Treasury
Bonus claw-back	Yes	Yes	Yes

to obtain a warrant to purchase non-voting stock such as preferred stock. If a warrant is not issuable, then senior debt was to be obtained. Given this background, the Treasury Secretary, Henry Paulson, initially tried to purchase troubled assets, mainly mortgages, from financial institutions. However, assessing the proper value of mortgages and their derivative products was not an easy task.<sup>28</sup> Especially when the public outcry over possible overpayment for the troubled assets became loud and the need to prop up rapidly declining capital ratios of banks became urgent, Secretary Paulson abandoned the debt purchase program and instead, pushed for the capital purchase program (CPP) whose terms for publically traded banks were announced on October 14, 2008. However, due to the public stigma of being viewed as a financially weak bank, not many banks were initially willing to sign up for the program. At the arm-twisting by the Treasury, however, nine large banks<sup>29</sup> reluctantly participated in the CPP on October 28, 2008.

Table 5 shows the major CPP terms for various types of corporations. The U.S. Treasury first released the TARP fund to the large publically traded companies and the small S-corporation banks the last. In fact, many community banks organized as an S-corporation had to wait for 3 more months and thus, did not get the immediate benefit that was available to the large banks, which is good evidence why “too-big-to-fail” was implicitly, if not openly, supported by the government. Furthermore, the dividend rate of 7.7% for an S-corporation is higher than that for a publically traded large company and a C-corporation.<sup>30</sup> If the cost of a warrant that had to be issued to receive the TARP fund was added to this dividend rate, the effective before-tax cost to a bank was estimated to be closer to 10% per year.<sup>31</sup> This level of funding cost in times of credit crunch seemed to be reasonable. However, given that the target federal funds rate was 0%–0.25% as of December 16, 2008, the TARP rescue fund was not a cheap source of fund to many healthy banks. Consequently, strong banks did not participate in the TARP. However, weak banks did and survived with the aid from the government to later compete against the strong. In summary, the banks with moral hazard were not punished and the banks too big to fail did not fail.

ProPublica (2010) reported that as of July 2010, there were 835 financial institutions that participated in the Capital Purchase Program under the TARP. The total amount that was committed to them was \$612.8 billion, disbursed among them was \$537.7 billion, and paid back was \$195.2 billion.<sup>32</sup> Judging by the number of participating financial institutions and the size of the rescue funds loaned out and paid back, the Capital Purchase Program seems to be a success. However, there still remains an unanswered question if it was truly better than the Bad Debt Purchase Program.<sup>33</sup>

### 3.3. The bailout of AIG

American International Group (AIG) is an American insurance company with global operations. It traded credit default swaps (CDSs) worth about \$441 billion<sup>34</sup> with many commercial banks, investment banks, and insurance companies insuring them against credit deterioration in mortgages and mortgage derivatives. Because its default would have a major

<sup>28</sup> It was like valuing a burning house. No theory, knowledge or technique could accomplish this task.

<sup>29</sup> They were Bank of America, JP Morgan Chase, Citigroup, Wells Fargo, Goldman Sachs, Morgan Stanley, State Street, Merrill Lynch, and Bank of New York Mellon Corporation. Some banks such as JP Morgan Chase did not wish to participate in the CPP. However, the Treasury insisted that regardless of their need, all banks participate as a group for the fear that the public may view those banks that participate in the program to be weak and thus, unduly punish them by withdrawing deposits from them.

<sup>30</sup> The logic for this difference is based on the federal income tax rate of 35%. That is, the after-tax return of 7.7% at a tax rate of 35% is 5%, equivalent to the dividend rate of a publically traded large company and a C-corporation.

<sup>31</sup> Hunton and Williams (2008) gives an after-tax effective cost estimate of 6.3% while the ICBA Securities (2008) gives its estimate as 6.45%. Therefore, assuming a tax rate of 35%, these become 9.69% and 9.92%, respectively. These rates did not consider costs associated with executive compensation, legal and administrative costs, etc.

<sup>32</sup> The total amount allowed in the EESA was \$700 billion. Initially, a half of it was to be used at the discretion of the U.S. Treasury and the remaining half at the approval of the Congress. The initial amount allocated to the TARP by Secretary Paulson was \$250 billion.

<sup>33</sup> The Resolution Trust Corporation, established in 1989 to clean up the S&L mortgage meltdown, is the primary example of how the bad debt purchase program by the government could have been instituted and administered. Also, some Asian countries such as Korea had used a bad debt resolution corporation after the 1997 Asian financial crisis to clean out the bad debt in an orderly fashion.

<sup>34</sup> For this estimate, see Leonnig (2008).

**Table 6**

Timeline of AIG rescue programs during the crisis.

Date of action	Amount given	Terms
9/16/2008	Fed gave a credit line of \$85 billion, making a total rescue fund available \$123 billion	Fed owns 79.9% of AIG
11/10/2008	The rescue fund committed to AIG increased to \$150 billion as Treasury gave \$40 billion of TARP money	Interest rate was lowered from 5.5% to 3% and the repay period extended to 5 years from 2 years.
3/2/2009	Treasury pledged \$30 billion of TARP money, making a total commitment over \$182 billion	Treasury gets preferred shares, paying a 10% dividend rate

repercussion throughout the U.S. and Europe,<sup>35</sup> the U.S. Treasury decided to bail it out by initially injecting \$40 billion of the TARP fund. However, as seen in Table 6,<sup>36</sup> the Federal Reserve was already bailing AIG out by making a credit line of \$85 billion available on September, 16, 2008.

The AIG bailout had the following problems: First, the terms of borrowing became a lot more favorable to AIG than any other financial institutions when the terms were revised on November 11, 2008. This may be due to the fact that the government was now the major shareholder of the company and thus, there was no need to cannibalize itself. However, the fact that the interest rate was lowered to 3% and the repayment period extended to 5 years for AIG was not equitable and fair to other ailing financial institutions. Second, the AIG bailout has cost the U.S. tax payers more money than necessary because the AIG debt holders were repaid in full without any concessions from them while they were under the dire situation. For example, Goldman Sachs received its full insurance coverage of \$12.9 billion, paid out of the \$182 billion rescue fund that AIG got from the tax payers. In fact, many other AIG clients such as Societe General and Barclays got a full coverage, totaling \$62.1 billion,<sup>37</sup> while an estimate for settling these obligations was given at about 48 cents per dollar.<sup>38</sup> Third, the AIG bailout created a serious moral hazard problem even though the government bailout made possible for AIG to continue its operation profitably and pay back all of its rescue funding. When the U.S. Treasury sold all AIG shares it held in December 2012, it claimed that the U.S. government has made a net profit of \$5 billion, based on total receipts of \$72.84 billion and total TARP disbursements of \$67.84 billion.<sup>39</sup> However, when the write-off of \$13.48 billion is considered, the AIG bailout still cost the U.S. taxpayers a net loss of over \$8 billion after more than 4 years of AIG bailout between September 2008 and December 2012.

In summary, the bailout of AIG truly reinforced the existence of the “too-big to fail” policy, revealed the unpreparedness of regulators in dealing with cascading financial problems,<sup>40</sup> and exemplified the prolonged nature of a moral hazard problem under government care.<sup>41</sup>

### 3.4. Other controversial policies

Besides the three cases discussed above, there are still many controversial policies that are worthy of being examined. For example, the conservatorship for Fannie Mae and Freddie Mac, the temporary short-sale ban on stocks, the participation of private equity funds to purchase banks, the value of conducting stress tests on selected financial institutions, the prolonged quantitative easing, etc., are all issues that contain controversy on their effectiveness.

However, given that the mortgage market was the epicenter of the crisis, the proper regulation of the real estate industry is important to prevent a similar crisis in the future. Besides a simple borrower and a simple lender in housing financing, for example, securitization of mortgages involves many intermediaries such as the originator, appraiser, packager, marketer, servicer, credit rater, financial engineer, regulator, etc. Regulating all of them effectively in one brush stroke is a difficult, if not impossible, challenge. Some ideas toward achieving this goal are found by (1) establishing a clearing mechanism for mortgage trading, (2) closely supervising originators and appraisers, (3) forcing tighter rating standards on credit raters, and (4) arranging better working relations among various state and federal regulators. Faced with the challenge to accommodate all these ideas effectively, O’Grady (2010) reports the Canadian case of not allowing any mortgage securitization at all by

<sup>35</sup> In a December 3, 2009 hearing for his re-nomination to the Fed chairmanship, Benjamin Bernanke said that an AIG bankruptcy, following the collapse of Lehman Brothers Holdings Inc. on Sept. 15, 2008, would have imposed “enormous damage” on the U.S. economy and “every American,” as reported by Torres (2009).

<sup>36</sup> A detailed timeline of various events that involve AIG can be found in the following link: <http://www.newyorkfed.org/aboutthefed/aig/timeline.html#slide1>.

<sup>37</sup> Among European banks, Societe General received \$11.9 billion, Deutsche got \$11.8 billion and Barclays was paid \$8.5 billion. See O’Callaghan and Zuill (2009).

<sup>38</sup> Bill Thomas, vice chairman of the Financial Crisis Inquiry Commission (FCIC), suggested this rate. See Gordon (2010). Another piece of evidence that AIG might have paid more than what it could have is found in the testimony by Joe Cassano in front of the FCIC on June 30, 2010. See Corkery (2010).

<sup>39</sup> See the following link for a detailed daily update of TARP money distributions and collections. <http://www.treasury.gov/initiatives/financial-stability/reports/Documents/Daily%20TARP%20Update%20-%2011.08.2013.pdf>.

<sup>40</sup> AIG was known to engage in regulatory arbitrage by setting up a large insurance business in London, instead of New York, for example. Thus, the ramifications of its bankruptcy in the international area was difficult for the U.S. government to properly assess.

<sup>41</sup> The cases of Fannie Mae and Freddie Mac are another good example of a continuing moral hazard problem. Despite all the good attempts, the health of these institutions still heavily depends on the government decision.

forcing lenders to hold their mortgage loans until maturity. Of course, such an idea may not be well received in the U.S. due to its existing addiction to securitization, if nothing else.

No one will ever know for sure if the presence or absence of various policies could or could not have helped the quick return of stability in the financial markets and thus, provided a reliable path to a steady economic recovery. Regardless of various intentions of policy makers, government administrators, bankers and institutional participants during the crisis, however, the impact of the crisis has been lingering on too long and all policies seemed to have failed to stimulate a satisfactory economic growth.

#### 4. Solutions

Given that the debate on what policies did or did not work during the crisis is still on going, this section reviews briefly various solutions that had been enacted into law to prevent future financial crises and then, suggests a few policy ideas that had not been used aggressively and could have helped an ailing economy recover quicker.

##### 4.1. Enacted solutions to prevent future crises

The condensation of all ideas that can solve or prevent future financial crises in the U.S. is written into law under the Wall Street Reform and Consumer Protection Act of 2010<sup>42</sup> or better known as the Dodd–Frank Act. Among its numerous titles and subtitles that contain many important regulatory solutions for the future financial crises, the following are noteworthy:

- (1) Creation of the Financial Stability Oversight Council (FSOC), the Consumer Financial Protection Bureau (CFPB), the Federal Insurance Office within the U.S. Treasury Department, the Office of Credit Ratings within the Securities and Exchange commission (SEC), The Council of Inspectors General on Financial Oversight, the Office of Housing counseling within the Department of Housing and Urban Development, etc.<sup>43</sup>
- (2) New or strengthened regulations on proprietary trading,<sup>44</sup> executive compensation and corporate governance, skin-in-the-game provision, marked-to-market requirement, “qualified mortgage” definition and application, corporate funeral plan, hedge fund operation, etc.

Even though these regulatory actions may have been necessary to prevent a future financial crisis, increasing regulatory requirements at the peak of the crisis may not have been a wise choice. Market participants over-burdened with new sets of regulation can only act passively until the true intent and the final effect of the regulation are fully assessed over time. This passivity had crimped the already-frozen real estate market activity and prolonged the economic recovery process.

The case of banks’ capital increase requested by the regulatory agencies such as the FDIC and the Fed during the crisis illustrates well the stress the banks had to go through without much benefit. [Chart 4](#) shows that the crumbling mortgage market in the 2007–2009 period produced an extraordinary amount of non-performing assets in the balance sheet of many banks. These assets when they become delinquent for more than 90 days are required to be written off a portion of their current market values as a loss to the bank regardless of their potential recoverable value at a later time. The write-offs reduce the bank’s capital. An economic downturn along with a financial crisis is also the most difficult time to raise capital because not many investors are willing to take the risk of a deteriorating market. When a bank experiences a rapidly declining capital ratio, the FDIC considers a possible termination of the bank’s existence.<sup>45</sup> In fact, this is the time when a bank with a high capital ratio is rewarded by regulators with an opportunity to bid on failing banks whereas a bank with a low capital ratio is constantly threatened with a cease and desist order and eventually a termination edict. Therefore, a bank must preserve its capital at all cost. To do that, it must not make loans that may become problematic. In a financial crisis and economic recession, it is prudent for a bank to consider all future loans problematic. Thus, no loans are eagerly made by banks and consequently, the credit market stays frozen. This is what aggressive regulation did to the credit market during the 2007–2010 crisis.

##### 4.2. Proposed solutions

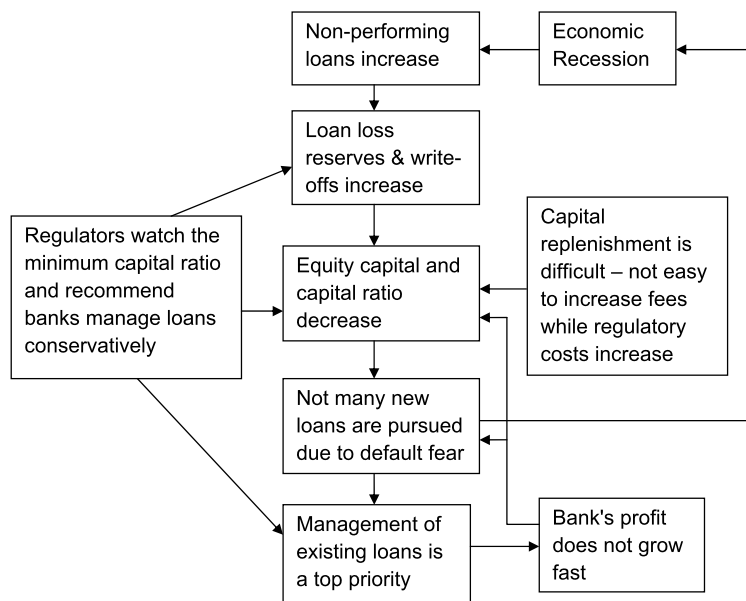
Alternatively, there were four possible solutions or remedies that the Dodd–Frank Act overlooked. The Act could have instituted a research and education program for management of financial institutions to act more counter-cyclically; eliminate the \$250,000 tax-free capital gain from a house transaction and reconsider the affordable housing emphasis; enforce

<sup>42</sup> This Act was initially proposed on December 2, 2009 and finally signed into law on July 21, 2010.

<sup>43</sup> The Dodd–Frank Act mandated creation of many more government agencies than listed herein. Furthermore, due to the number and the complexity of rules to be formulated under this Act is too many and challenging, it has been considered as over-reaching regulation. For example, in an article reported by [Scannell \(2010\)](#), SEC Chairperson Mary Schapiro complained in great length the hurried nature of the new financial reform regulation and the extraordinary amount of rule-making work required at the SEC.

<sup>44</sup> This regulation is also known as the Volker rule which tries to prevent proprietary trading within a financial institution.

<sup>45</sup> The capital ratio is the single most important indicator for regulators in judging the health of a bank.



**Chart 4.** The status of a typical bank in the middle of a financial crisis.

foreclosure rules fully; and expand the Small Business Administration (SBA) loan programs aggressively. Each of these is further elaborated next.

#### 4.2.1. Educate bankers to act counter-cyclically

During a financial crisis, the regulatory concern and advice is so powerful that the more uncertain the financial market condition is, the more a bank restrains itself from making loans or extending lines of credit to businesses in an attempt to minimize any potential loss and to preserve an adequate capital ratio. Because all bank CEOs are concerned with the capital ratio, their behavior is often pro-cyclical. They tend to expand loans excessively in good times while they tend to withdraw from making loans in bad times such as the recent economic recession. The key to a long-term steady growth for financial institutions is to make them behave counter-cyclically by encouraging them to make loans while sharing the risk with their customers, shareholders and government effectively. In this regard, the federal government can provide a comprehensive program to educate the management of small and medium-sized financial institutions the research findings on the current economic and financial conditions.<sup>46</sup>

#### 4.2.2. Suppress mortgage-based speculation

The U.S. has had an affordable housing policy for many decades, impressing upon its citizens to own a home. This policy surfaced during the 2007–2010 crisis as one of the culprits for starting the mortgage melt-down. Its specific negative impact on the economy was felt when subprime and alt-A borrowers were eager to borrow to fulfill their life's dreams of owning their own homes. There now exists a need to initiate a new national policy to put less emphasis on home ownership and instead, more emphasis on viable rental housing projects.

Along this line, certain tax incentives given to home owners need to be reconsidered. More specifically, elimination of mortgage interest deductibility from federal income tax and property tax deductibility from state income tax would reduce the desire to own a home and steer many would-be homeowners to become affordable home renters. Furthermore, elimination of tax-free capital gains from home sales up to \$250,000 per person<sup>47</sup> should be instituted as soon as possible. This incentive played an important role in adding fuel to the housing speculation fire during the recent financial crisis. None of these exists, for example, in Canada where no serious mortgage market melt-down had occurred.

#### 4.2.3. Enforce foreclosure rules

Also, the lax enforcement of mortgage defaulters has to be improved. During the recent crisis, Fannie Mae and Freddie Mac via the government conservatorship have been lenient to many mortgage defaulters by either restructuring their mortgages or forgiving some portion of them. This practice produced many strategic defaulters who simply walked away from

<sup>46</sup> Large financial institutions with an asset size greater than \$50 billion often have their own research team to gauge the current economic and financial conditions. However, due to cost, many small and medium institutions do not.

<sup>47</sup> For a couple, it is \$500,000. However, in order to be eligible for this tax-free capital gain, one must meet a 2-year principal residence requirement out of the past 5 years. There is no life-time limit to how many times you can buy and sell homes to profit. Technically, an individual can profit \$250,000 every 2 years by buying and selling principal residence. See Bell (2010).

**Table 7**  
Demand for Section 7(a) SBA loans since the passage of ARRA of 2009.

Date or month the fund became available	Total amount allocated (\$millions)	Date or month the fund was exhausted
February 17, 2009	\$375	November 23, 2009
December 2009	\$125	Late February 2010
March 2010	\$60	Late March 2010
Late March 2010	\$40	Late March 2010
Mid-April 2010	\$80	May 31, 2010
Total as of May 31, 2010	\$680	

Source: Matz (2010).

their mortgage obligations even if they were capable of paying some mortgages. They often stayed rent-free for 18 months to 2 years until the foreclosure forced them out. Then, they would borrow money, buy a home, and become a strategic defaulter again. These types of defaulters must be punished to the fullest extent of the law so that no additional moral hazard would occur. The U.S. government which is now the largest mortgage issuer in the world by owning Fannie Mae and Freddie Mac must be diligent in ridding of this type of moral hazards.

#### 4.2.4. Expand the SBA loan program

An expansion of the Small Business Administration 7(a) loan program would be a very tangible and viable solution to the ongoing small business needs for greater financing opportunities and the slower-than-hoped-for economic recovery dilemma.<sup>48</sup>

The way to encourage bank lending during a crisis is by having a loss-sharing arrangement with government on certain types of loans. The Small Business Administration (SBA) loans are good examples of how banks are encouraged to make loans in difficult times. The U.S. government via the Section 7(a) SBA loan program guarantees up to 90% of the loans made to small businesses.<sup>49</sup> As part of the American Reinvestment and Recovery Act (ARRA) of 2009 that was enacted on Feb. 17, 2009, SBA distributed a total sum of \$680 million to small businesses. Due to the strong demand for this program as shown in Table 7, it was extended with new funds for many times. The interesting point, however, is the size of the funding given to this program in relation to various bailout programs that the Fed and the Treasury had implemented.

The performance of these SBA loans has been remarkable during this financial crisis and economic recession. There were \$50 billion 7(a) loans outstanding as of March 31, 2010. The charge-off of \$644 million represents 1.29% which compares favorably with that of a bank in this turbulent economic time. Therefore, an expansion of the 7(a)-type SBA loan programs will be the more cost-effective way of encouraging bank lending and rejuvenating the economy than expensive bailouts of large financial institutions.

Using the data on the Small Business Lending Fund (SBLF) of the U.S. Treasury Department between September 2010 and April 2012, Choi (2012) examined the contribution of the government-sponsored fund on banks' loan activity. His finding shows that a \$1 increase in SBLF funding contributed to a \$49.5 increase in a bank's total assets and that the total assets increased by \$0.6 per each \$1 increase in the baseline business loan, net of the SBLF funding effect. Even though this analysis is not based on SBA loans, it indicates the elastic responsiveness of small businesses to government funding in times of economic and financial uncertainty.

## 5. Conclusions

The 2007–2010 financial crisis originated from excessive liquidity afforded by low interest rates and active securitization and trading of mortgages and their derivatives. The excess liquidity flowed into the mortgage market which turned sour when interest rates increased in 2005 and an economic recession followed soon thereafter. The large scale mortgage market meltdown caused a severe liquidity freeze, which in turn worsened the economic and the mortgage market recoveries. Many financial institutions had to fail and their failures created more uncertainty about the prospect for recovery. Many government agencies played important roles in an attempt to rejuvenate the economy and the financial market by providing liquidity and stability. However, due to the urgency and magnitude of the crisis, there were some policies that could have been handled differently. This paper lists three major controversial ones: the bankruptcy of Lehman Brothers, the policy reversal from debt purchase to capital purchase, and the bailout of AIG. After a detailed review of these cases, some fundamental solutions to prevent future financial crises, as embedded in the Dodd–Frank Act, are briefly examined by highlighting the creation of many new government agencies and an introduction of new rules and regulations.

<sup>48</sup> While the macroeconomic role of the fiscal policy and monetary policy during the crisis has been emphasized in stimulating the economy during the current crisis, the microeconomic role of structural and regulatory underpinnings has not. The idea of expanding the SBA loan programs during the crisis centers on the notion that stimulating small businesses is like greasing the wheel of the economy to turn as explained by Choi (2012).

<sup>49</sup> There are many types of SBA loans, of which two – Section 7(a) and Section 504 loans – are most prominent. While 504 loans are mainly for the purchase of real estate and expensive fixtures, 7(a) loans are for working capital and fixed assets. 7(a) loans normally have a SBA guarantee of 85% for loans under \$150,000 and 75% for loans greater than \$150,000 but less than \$2 million. Under the American Reinvestment and Recovery Act of 2009, the guarantee was increased to 90% until May 31, 2010.

While the Dodd–Frank Act covers and codifies a vast amount of new ideas and concepts to prevent future financial crises, the four possible solutions or remedies that the Dodd–Frank Act overlooked are discussed. They are: institute a research and education program for management of financial institutions to act more counter-cyclically; eliminate the \$250,000 tax-free capital gain from a house transaction and reconsider the affordable housing emphasis; enforce foreclosure rules fully; and expand the Small Business Administration 7(a) loan program to stimulate the economy by helping the small businesses.

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