

Original Paper

Capital Adequacy and Liquidity of Global Financial Institutions:

A Study of Reforms after the Great Recession

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Abstract

The global financial crises of 2007-2009 was followed by the Great Recession which was the worst since the Great Depression of 1930s. The crises left significant adverse effects on global growth and employment. Policymakers of affected countries responded differently to the outcomes of these crises. The central banks, including US Federal Reserve Bank and Bank of England, provided ample liquidity for the financial institutions and lowered the interest rate to near zero. The policymakers and regulators realized that capital inadequacy and insufficient liquidity of financial institutions were the main problems preventing the financial firms to protect themselves against major financial crises. In addition, lack of guidelines for compensations encourages managers to take the extra risks.

The US Federal Reserve Bank took the initiative, in cooperation with international central banks to introduce rules and regulations to safeguard the financial systems against another major crisis. It is not guaranteed that another episode of financial instability will not happen again. However, with existing regulations on financial institutions in force, the severity of the crises on the whole global financial system may possibly become weaker. This is a conjecture we explore here.

Keywords

great depression, great recession, financial crises, liquidity, regulations, capital adequacy, monetary policy

1. Introduction

The global financial crisis 2007-2009 was followed by the Great Recession that was the worst after the Great Depression of 1930s. These developments left significant long-lasting depressing effects on growth and employment of affected countries. Policymakers of involved countries reacted differently to

the financial crises. Some like Lehman Brothers were left to fail, while Bear Stearns, with the help of US Federal Reserve Bank was purchased by Chase Manhattan. The European financial institutions such as Northern Rock in UK and most of the bank in Iceland were nationalized. The central banks, including US Federal Reserve Bank and Bank of England provided ample liquidity for the financial institutions and pushed the interest rate to near zero. The policymakers and regulators realized that capital inadequacy and insufficient liquidity of financial institutions were the main problems preventing the financial firms to protect themselves against major financial crises. In addition, lack of guidelines for compensations encourages managers to take the extra risks. Further problem arose from the lack of guidance for consumer lending practices.

The US Federal Reserve Bank took the initiative domestically and internationally to introduce rules and regulations that tried to rectify the above-mentioned problems. It is not guaranteed that another financial instability will not happen again. However, with existing regulations on financial institutions in force, the severity of the crises on the whole global financial system may, to some extent, be weaker. At least that is a conjecture worth examining.

The purpose of this paper is to briefly analyse the financial crises and the Great Recession of 2007-2009 and discuss what steps have been taken to protect consumers and financial institutions against occurrence of another major financial instability. Some statistical evidence is offered in Section 2. In Section 3, a brief background of financial crises is discussed. Major recent reforms and regulations for sound operating financial institutions are presented in Section 5. Summary and concluding remarks are discussed in Section 6.

2. Some Statistical Evidence

The financial crisis of 2007-2009 was one of the deepest instability that occurred in the global financial system since the Great Depression of 1930s.

Generally, major financial crises are followed by a recession in the affected countries. The Great Recession of 2007 followed the financial crises and again produced adverse effects on the global output and employment that lasted for long periods. In Figure 1 growth rate of world and OECD countries during the past three decades are plotted. Both series indicate significant negative growth rates around 2007 to 2010.

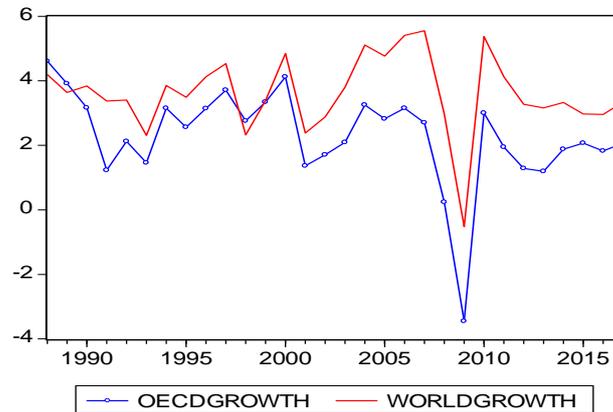


Figure 1. World and OECD Growth 1988-2017

For the sake of comparison, the growth rate of US real GDP is plotted in Figure 2. This series almost followed the two series in Figure 1, showing a sharp decline around 2007-2009.

Using US data, Figure 3 shows fluctuations of US growth rate during the Great Depression of 1930s and the Great Recession 2007-2009. The growth of US output fluctuated much more widely in the earlier period, between -15 and +15 percent. The Growth rate varied less frequently during the Great Recession, -2 and +2 percent in 3 to four years. The recovery in the latter period was quick but not significant to reduce the unemployment very quickly.

Further depressing effects of Great Recession are presented in figure 4 where world OECD and US trades all fell before recovering again in 2009.

A comparison of the downside fluctuations in growth rates during the Great Recession is provided in table 1 where standard deviation of growth rates of world, US and OECD in two sub-periods, 1988-2005 and 2005-2015 are presented. In all of the three cases growth rate fluctuate more widely in the second sub-period at the time of the Great Recession.

Table 1. Fluctuations of Growth Rates

Areas / Years	1988-2005	2005-2015
United States	1.30	1.72
OECD	0.98	1.87
World	0.85	1.19

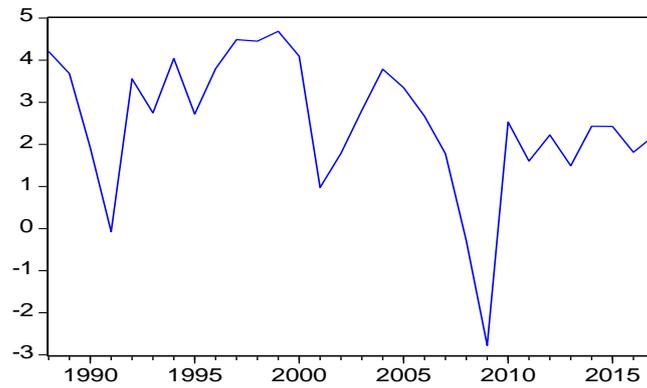


Figure 2. Growth of US Real GDP 1988-2017

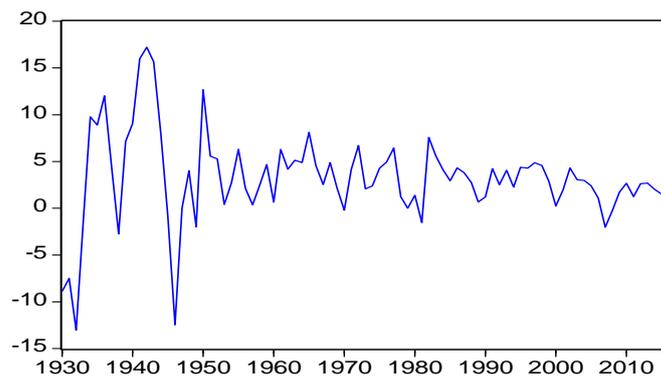


Figure 3. Growth of US Real GDP 1930-2016

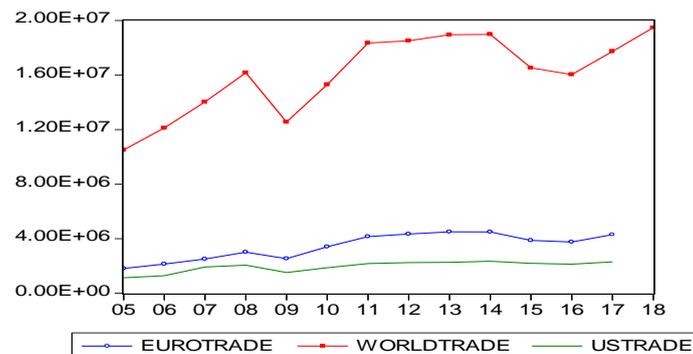


Figure 4. Global Trade 2005-2017

3. Financial Crises and the Great Recession 2007-2009

The financial crises, also called the subprime mortgage crises, started in the United States after a persistent long low interest rate period caused a boom in the real estate market.

According to Monadjemi and Lodewijks (2015), in October 2009 the IMF estimated global losses in the banking sector of \$3.6 trillion as a result of the Global Financial Crisis. How did this happen? Speculative booms, often in real estate and stock markets, and the excessive accumulation of debt, are basic features of most crises. In this case housing was the source of the crisis combined with a new

innovative financial product—subprime mortgage-backed securities. In the old days the bank that initiated the mortgage held the mortgage. Mortgage-backed securities pooled illiquid assets like mortgages into liquid assets that were tradeable on the open market. With securitization investors could buy shares in bundles of mortgages from different geographic regions.

Securitization transferred risk from bankers to investment banks and investors around the world. Since the bank no longer bears the consequences of making bad loans it has less incentive to monitor loan quality and undertake appropriate risk management practices.

The housing market became a focus of intense speculative interest. The price of housing assets exceeded its underlying fundamental value and led to excessive accumulation of debt as investors borrowed money to buy into the boom. With its value rising, the asset that is the heart of the bubble serves as collateral so home-owners and investors can borrow more and become more leveraged. The excessive accumulation of debt, by households, the financial institutions and corporations was an essential element of the story. The housing bubble—From 1999 to 2005 led to home prices increasing by 62 percent in the U.S.—contributed to real estate and consumption boom.

The mortgages had high transaction costs, very low interest rates and no safeguards in the event of default and as more and more low-income borrowers defaulted, houses were repossessed and sold at substantially lower prices. The value of the subprime mortgage-backed securities plummeted as some 500 hedge funds perished, the shadow banking system collapsed and the conventional banking system came under pressure.

Financial institutions had undervalued the long-term risk of holding these securitized mortgages. They took unbounded risks that they thought had low probability of occurring—tail risk—by slicing and dicing credit risk but did not take due diligence in appraising the underlying financial products. The official rating agencies were no help at all. Sixty percent of all asset-backed securities were rated AAA during the lending boom, whereas less than 1 percent of all corporate bonds were rated AAA. Exotic financial engineering instruments like Collateralized Debt Obligations (CDO), Derivatives, Credit default swaps—insurance against the collapse of some asset/bank—were so complex to understand that those that held them did not know the risks involved or even the extent of their own exposure, let alone that of other financial institutions, and so trust and confidence among banks and non-banks evaporated.

4. Great Depression and Great Recession Compared

Blanchard and Summers (2017) compared response of the US economy to macroeconomic stabilization policy conducted during the Great Depression (GD) and the Great Recession (GR). Both GD and GR started with financial shocks.

The GR was initially caused by large quantities of non-performing mortgages held by financial institutions in Europe and the United States. The crises became global when high risk mortgage loans were packaged together and passed to financial intermediaries throughout the world. The non-performing assets caused a shortage of liquidity in many affected financial institutions. Bank lending

was significantly reduced and the mortgage crises led to the GR, which was the biggest since the GD of 1930s.

Blanchard and Summers (2007) argued that in 2008 the US economy did not completely collapse as it did in 1933. However, the recovery in the latter period was much slower than the former. This means that the growth rate of the US economy was much higher in the late 1930s than it was in the recovery after the 2008. The authors point out that the macro stimulation policies, fiscal and monetary, and bail out of financial institutions during the GR, were significantly higher to keep the unemployment much less than the 25 percent that was experienced in 1929.

Some argue that the recovery from 2008, would have been quicker if policy makers learnt from the 1930s and took radical and aggressive measures (see <http://www.history.com/topics/great-depression>). The difference between 2008 and 1930s was in 1939 the worst kind of public works program was implemented. It was called World War II. The fight with fascism made significantly large deficits to be acceptable, and, as a result the economy recovered strongly. However, in 2008 there was no war to force the government to spend a substantial amount of money. “Think of it as a reverse Goldilocks economy. Things aren’t desperate enough to force thenment to do more, but they aren’t good enough to put everyone to work. It might not be a great depression, but it is a long one” (see <http://www.history.com/topics/great-depression>).

Blanchard and Summers (2007) argue, recoveries from the GR and the GD crises suggest that, economies cannot stabilize automatically without government intervention. Without any intervention, the outcome of financial crisis would have been like the Great Depression. The authors do not suggest the Keynesian recommendations similar to 1960s and 1970s. The economic situation is different. The financial systems are more sophisticated and at a low rate of interest, implementation of monetary policy is difficult. They suggest the followings: First, a mix of aggressive monetary and fiscal policy. Second, conducting monetary policy should be designed to provide liquidity for the financial institutions. Third, a heavier use of fiscal policy should be exercised, without being concerned with debts combined with a more active regulation of financial institutions is required.

5. Regulations and Reforms after Financial Crises

Monadjemi and Lodewijks (2019) note that Duffie (2016) briefly examines the post-crisis regulatory reform of the financial system, the most important re-regulation of “banking and financial markets since the U.S. “New Deal” reforms conducted during the Great Depression”. Duffie maintains that towards the end of 2007, the real gross domestic products of the United States and the Euro area both declined by about 4%.

Central bankers and finance ministers around the world instructed financial regulators to reintroduce regulations on a grand scale. These reforms were well overdue. Many of the global largest financial institutions had practised unsafe levels of risk by exploiting weak solvency regulations in derivatives and securitization markets.

In the United States, the most toxic financial institutions were investment banks that raised funds with run-prone wholesale short-term financing of their securities. A large portion of this funding was obtained from unstable money market mutual funds. A substantial amount of this money-fund liquidity was arranged in the overnight repo market, which was discovered by regulators to rely precariously on two U.S. clearing banks for trillions of dollars of intra-day credit. The core plumbing of American securities financing markets was a model of disrepair.

Just before the Great Financial Crisis of 2007-2009, the biggest sources of risk to the financial system were poorly supervising, excessively approving residential loans and accumulating risky peripheral European sovereign debt. Macroprudential regulation, however, is mainly concerned with the resiliency of the financial system to shocks originating from inside or outside. In the words of Tucker (2014), “Overall, the test is whether the reforms can increase the resilience of the system as a whole, reduce contagion when trouble hits, and mitigate the pro-cyclicality of financial conditions”.

Duffie (2016) identifies the following regulatory elements proposed by for each of the G20 nations, by the Financial Stability Board (FSB):

1. Making financial institutions more resilient.
2. Ending ‘too-big-to-fail’.
3. Making derivatives markets safer.
4. Transforming shadow banking”.

The author argues that at this point, only the first of these core elements of the reform, “making financial institutions more resilient”, can be considered as a clear success, given that more work in this area is required.

Earlier work by Robert J. Shiller had argued that stocks show excessive volatility relative to what can be predicted by the efficient market model. Stock market prices are far more volatile and deviations from fundamentals too large to be rational or consistent with ‘efficient’ market outcomes. He, and others, focus on irrational exuberance, bubbles and panics, and impulsive herding behaviour and champion the need to understand human psychology and behavioural economics. More conventional economists explain financial market behaviour using standard economic concepts such as incentive structures and compensation packages. In 2006 annual bonuses accounted for 60 percent of total compensation in the five biggest American investment banks and this led to a focus on short term profits and encouraged excessive risk-taking. The solution is to make compensation structures incentive compatible. All of this can be easily understood using simple applications of moral hazard, asymmetric information and principal-agent concepts.

In response to the developing global financial crisis there were fiscal stimulus packages world-wide and very substantial cuts in official interest rates. The actions of the U.S Federal Reserve were unprecedented. In 2009 with interest rates close to zero, the Federal Reserve engaged in very unorthodox monetary measures involving quantitative easing, capital injections, and central bank swap lines that Roubini and Mihm (2010) describe as having “revolutionized monetary policy”. A stunning

series of unprecedented interventions into the financial system rescued both illiquid and insolvent financial institutions and even involved swapping safe government bonds for toxic assets.

In the U.S. 40 percent of conventional deposits were uninsured and the government was forced to provide a blanket guarantee—the equivalent of deposit insurance—to all existing money market funds. They guaranteed bank debt irrespective of how prudent or otherwise these institutions had been. The Federal Reserve made loans directly to ailing financial institutions, including non-depository institutions, and bought up long terms government debt and mortgage-backed securities, credit card debt and auto loans. The central bank became lender of first, last and only resort marshalling a massive expansion of government support for the financial system. The Government became effective owners of a large part of the financial system as it bought shares and injected capital to prevent foreclosures. The nature of the intervention was so extensive that the distinction between monetary and fiscal policy is now not at all clear as the monetary interventions have clear spending and tax implications. The subsidization of the financial system—subsidizing the ‘bad’ investment decisions of the banks and non-banks with taxpayer money—and the purchase of risky asset-backed securities, will all leave a burden that will fall on taxpayers.

In Europe the fiscal interventions have raised the spectre of sovereign debt defaults and even the collapse of the Euro. The Global Financial Crisis has questioned a number of our prior beliefs. Whereas Greenspan in 2005 praised financial innovation like subprime mortgage lending, and in 2000 the derivatives markets, including credit default swaps, was made off-limits to regulation, while economists lauded the “great moderation” of less volatile business cycles—all these developments have now come under question. The very nature of monetary policy has changed with credit growth, debt and price bubbles now very much on the agenda.

6. Monetary Policy Reforms

Monetary policy is generally more effective to control inflation than reversing down-turn and recession. The ineffectiveness of monetary policy in deep recession was initially advocated by John Maynard Keynes in 1936. Keynes named this situation liquidity trap with at a very low rate of interest, additional expansionary monetary policy leave interest rates unchanged, and hence no effect on output and employment. In recent periods monetary policy ineffectiveness was observed in Japan in 1990. In the 1970s, Japan’s gross national product (GNP) was the second highest in the world, after the United States and, by the late 1980s, ranked first in GNP per capita worldwide. But all of that changed in the Lost Decade of 1990s when its economy stagnated. Most economic crises generally follow an economic boom where assets valuations do not reflect reality. Japan’s lost decade was mainly caused by speculation during the boom period. Record-low interest rates led to stock market and real estate speculation that sent valuations soaring throughout the 1980s.

Knowing that the bubbles are was unsustainable, Japan’s Finance Ministry increased interest rates to calm down the speculation. This action very quickly caused a stock market crash and debt crisis, as

borrowers failed to make payments on many loans that were backed by falling asset prices. Finally, the problem created a banking crisis that led to amalgamations and bailouts of the banks by the government. After the initial economic shock, Japan's economy was sent into its now-infamous lost decade, where economic expansion halted for more than ten years. The country experienced low growth and deflation during this time, while the Japanese stock markets hovered near record lows. The property market never fully returned to its pre-boom levels. Economist Paul Krugman blames the lost decade on consumers and companies that saved too much and caused the economy to slow. Other economists point blame at the country's aging population demographic or its monetary policy—or both—for the decline. In particular, the slow response of the Bank of Japan (BOJ) to intervene in the marketplace may have exacerbated the problem. The reality is that many of these factors may have contributed to the lost decade.

Following the crisis, Japanese citizens started saving more and spending less, which had an adverse effect on the economy. This development led to deflationary pressures that encouraged consumers to further hoard money, which resulted in a deflationary spiral.

The Bank of Japan reduced the policy rate to 0.25 percent in September 1998, reaching a stage where the conventional monetary policy of interest rate setting had been almost exhausted. Japan's economy was confronted with the "zero lower bound on nominal interest rates". However, prices and output did not respond. In this situation, the Bank of Japan decided to conduct various forms of unconventional monetary policy measures. Many people know about expressions such as "zero interest rate policy", "quantitative easing", "credit easing", and "forward guidance". These are terminologies for unconventional monetary policy conducted by central banks in the United States and Europe to defeat the global financial crisis. Most of these policy measures were already implemented in by the Bank of Japan in response to the 15 years of deflation since the latter half of the 1990s. The Japanese reaction to financial crises prevented Japan's economy from falling into a deflationary spiral of continuing rapid economic deterioration and considerable deflation.

The Japanese experience taught European and American central banks, at the time of financial crises characterized by shortage of liquidity, large-scale liquidity provision by the central banks had the effect of preventing financial institutions' anxiety about liquidity and avoiding a severe credit contraction. One of the important messages that came out of financial crises concerns how lender of last resort function of the central banks, by provision of liquidity, can help maintaining the stability of the financial system.

During financial crises 2008, from immediately after the collapse of Lehman Brothers, central banks in US and Europe supplied large amounts of liquidity. The past policies exercised by the central bank of Japan, not only contributed to maintaining the stability of the financial systems, but also helped the economy by providing accommodative financial conditions. In fact, Japan's long-term interest rates remained at a low level in the range of 1-2 percent throughout most of the 2000s. Real GDP grew at an annual average rate of 1.5 percent between 2000 and 2007. In this manner, Japan's economy avoided falling into a deflationary spiral.

Unconventional monetary policy was conducted after the 2008 financial crises. As mentioned earlier, the problem with conventional monetary tools in periods of deep recession or economic crisis is that they become limited in their usefulness. Nominal interest rates are effectively near zero and cannot fall further. Open market operations through government securities market doesn't work since private holders are unwilling to sell them at the time of uncertainties. Under this situation, instead of buying government securities, the central bank can purchase other securities. This is often referred to as quantitative easing (QE). The types of securities purchased during QE are normally bonds or debt instruments issued by financial institutions such as mortgage-backed securities (MBS).

If the usual QE is unsuccessful, a central bank can take the more unconventional strategy of actively purchasing shares of stocks on the open market. During the years after the financial crisis, central banks around the world did, in fact, engage in equity markets to some degree.

The central bank may also signal its intentions to maintain interest rates low for long periods of time in order to boost investor confidence, which can stimulate the overall economic activity.

In general, central banks conduct monetary policy through interest rate targeting, setting bank reserve requirements, and engaging in open market operations with government securities. In periods of severe economic downturn, these instruments cannot help as interest rates approach zero and banks become worried about shortage of liquidity. Conducting open market operations with other tools than government bonds, such as mortgage-backed securities, can help under these circumstances. This strategy is called quantitative easing. When QE is not sufficient, the central bank can enter other markets and signal that it will conduct an expansionary monetary policy for a long period of time.

The following discussions and quotations are from the speech given by Ben Bernanke in 23d October 2009 at the Federal Reserve Bank of Boston 54th Economic Conference, Chatham, Massachusetts.

About a year ago, the global economy faced the most severe financial crisis since the Great Depression. Fortunately, strong and coordinated policy actions avoided a global financial collapse, and since then, assisted by a variety of government programs, financial conditions have improved substantially. Although, the worst financial and economic outcomes was avoided, the adverse effects of the crisis have been very severe, as indicated in the depth of the global recession and the remarkable declines in employment both domestically and abroad. With the financial collapse avoided, now the policymakers should take the opportunity to reduce the probability of the recurrence of any future crises.

Although the crisis was a mixture of events with multiple causes, weaknesses in the risk-management practices of many financial firms, together with insufficient capital and liquidity, were important contributing factors. Many regulators and supervisors did not recognize and correct those weaknesses in advance of the crises. Accordingly, all financial policy makers, including the Federal Reserve, must learn from the experience of the past two years, identified shortcomings to prevent occurrence of another major crises.

It is not apparent that we have solved issues of global financial instability or economic stagnation. Interest rates are exceedingly low (if not negative) yet there appears no resurgence of inflation or rebound

in economic activity. Negative interest rates can potentially damage an economy as it distorts investment decisions. This becomes apparently clear when rates rise and borrowing cannot be serviced. Quantitative easing also has a mixed record of success.

If real economic activity is upended by shocks such as trade wars and Brexits then the harmful consequences can only for a time be put-off by monetary policy, conventional or otherwise. Fiscal policy activism may be the only card left to play. These developments are not helped with trade wars between the major global powers and Brexit considerations. Central bank worries about impending inflation appear unwarranted. Yet despite heralded advances in information technology and blockchains and AI and machine learning, the effects on productivity and growth are not obviously apparent. On the other hand, debt levels of both governments and individuals appear to be at excessive levels suggesting a coming reckoning.

Global growth rates of income and output have been mediocre in recent times. Even the Chinese economy that grew on average at 10% per annum from 1980-2010 is now approaching half that rate of growth. This is quite surprising given all the technology disruptive business activity involving artificial intelligence, blockchain, machine learning and robotics. The 4th industrial revolution does not appear to be visible in the growth and productivity statistics. What is visible is stagnant real wages for workers despite low unemployment. It is claimed that in America the real average wage has about the same purchasing power today as it did 40 years ago. Wage gains there have mostly flowed to the highest-paid tier of workers.

Another conundrum is that often stock markets reach dizzy heights but that is also not reflected in increased private investment and productivity growth. There seems a disconnect between financial markets and real economic activity. One issue that is very visible is trade and currency wars among the two largest players in the global economy. That is clearly affecting the real economy.

These places the global economy in a fragile state. Is there another crisis in the wings? Moreover, if there is, are we equipped to adequately respond? Interest rates are very low, even negative. Conventional monetary policy has reached its limits. We live in interesting times.

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