

Why the Subprime Financial Crash Should have been Prevented and Implications for Current Macroeconomic and Regulatory Policy

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Abstract: The subprime crisis was not anticipated by the Federal Reserve Bank, the Bank of England or by many other economic commentators. However, in the twenty-five years or so before the 2008 crash, there were marked warnings of the increasing fragility of the US financial system. The failure of Long-Term Capital Management, which nearly brought down the US and world banking systems, pointed to the dangers of the reliance on complex computer algorithms, big data used over short time periods, and excessive leverage. The US savings and loan debacle showed that banking fraud can be endemic at a time when regulatory control is weakened. This chapter presents an overview of these events, which anticipated many of the causes of the subprime crisis, but were ignored. Serious banking fraud has been prevalent both during, and subsequent to, the subprime crisis. The chapter also considers the implications for future financial regulatory policy including the Dodd-Frank Act.

Keywords: Subprime Crisis, Long-Term Capital Management, Savings and Loan Debacle, Financial Fraud, Regulatory Policy and Reform

JEL Classification: B52, E02, G1, G18

1. Introduction

It is now over a decade since the subprime crisis (or the Great Financial Crisis, as it is sometimes called) occurred. It is usually taken as beginning in August 2007, when the large French Bank BNP Paribas prevented its investors from accessing funds that contained subprime mortgages. The crisis was the worst since the Great Depression and dwarfed the East Asian financial crisis of 1997 and the six other post-war banking crises in the advanced countries. These were the UK secondary banking crisis of 1973-

75, and the banking crises of Spain (1977), Norway (1987), Sweden (1991) and Japan (1992) (see Reinhart and Rogoff, 2011). The ramifications of the Great Financial Crisis, in the form of low productivity growth and irretrievably lost output, are still present today.

What is remarkable is the degree to which even in the months in the immediate run up to the crisis, few economists and no regulatory bodies, including the central banks, the IMF and the OECD, had any idea that a crisis of the size that occurred was remotely possible. Bezemer (2009) identifies only ten economists who were concerned about a potential crisis, but even these did not provide a detailed explanation of the likely precise causes. One exception was the IMF Chief Economist Ray's (2005) prescient warning about the perverse incentives facing bankers, dismissed by Former US Treasury Secretary Summers as "slightly luddite" and "largely misguided" (Wallace, 2015, p.4). Shiller (2007) correctly identified the increase in US house prices as a bubble, but did not identify the severity of the consequences when it burst. Another exception was Borio and White (2004) of the Bank for International Settlements.

Hindmoor *et al.* (2015) confirm this lack of foresight for the UK by a detailed examination of such evidence, *inter alia*, as the official reports by the Bank of England, the Treasury and the Financial Services Authority. Golub *et al.* (2014) looked at the case of the US. They analyse the number of times that the terms subprime mortgages and collateralised debt obligations (CDOs) and credit default swaps (CDS) appear in the minutes of Federal Open Market Committee (FOMC). It was not until 2007 that they are first mentioned. The Financial Crisis Inquiry Commission (FCIC, 2011) that was set up by Congress to examine the subprime crisis, notes that in the US, "Even among those who worried that the housing bubble might burst few - if any - foresaw the magnitude of the crisis that would ensue" (p. 3).

In this chapter, we analyse two major warnings that should have alerted policy makers to the possibility of a financial crash, but did not. These are the failure of the hedge fund Long-Term Capital Management (LTCM) in 1997 and the Savings and Loans (S&L) debacle during the 1980s. The former was too financially interconnected

with other banks to be allowed to fail and the latter demonstrated the effect of weak regulation and banking malfeasance in a banking crisis. Moreover, there was also increasing evidence of the problems with over-the-counter (OTC) derivatives during the 1990s that went unheeded by Greenspan and other influential regulators. Convinced of the efficiency of unregulated financial markets, these regulators, in 1998, actually blocked the Commodities and Futures Trading Commission from instigating a public discussion as to whether OTC derivatives should be regulated after it had issued a 'concept release'. After this intervention occurred, the subprime crisis became inevitable.

In the light of these events, we also assess the current regulatory reform including the Dodd-Frank Wall Reform and Consumer Protection Act (which is similar in many ways to Basle III) as to whether or not the lessons have now been learned. There are worrying indications that they may not have been.

2. Securitisation and the Failure to Regulate Derivatives

The causes of the subprime crisis have been exhaustively analysed (see, for example, Arestis *et al.*, 2011; Buckley, 2011; FCIC, 2011; and Lo's 2011 review of 21 books about the subprime crisis). Consequently, we will not deal with these in any detail.

A major development in structured finance was the increasing securitization from 1986 onwards of mortgages into residential mortgage backed securities (RMBS). These securities were sold for a capital sum, with the mortgage payments paying the interest earned by the security. This had the great advantage of raising further funds for new mortgages, especially for non-bank mortgage originators that could not take deposits. From the late 1990s, these financial institutions began increasingly to originate subprime mortgage loans to low-income households and the loans were then securitised by the various investment banks.

The RMBS were divided into, say, three tranches. (In practice, there could be more than just three.) The junior tranche would take the first loss from any default on the mortgage payments and, hence, would pay the highest interest rate. Next, there was the mezzanine tranche, less risky but receiving commensurately less interest. The

senior tranche paid the lowest interest rate, but was considered to be almost as safe as US Treasury Bonds. These tranches had the advantage of catering for the different risk preferences of investors and, supposedly, allowed for a more efficient allocation of capital.

A problem was the junior tranche had a low rating (say triple B) from the rating agencies (discussed below) and was difficult to sell. To overcome this, it was bundled together with other junior tranches into a Collateralised Debt Obligation (CDO). The rating agencies were persuaded to rate this as, say, a triple A, because the CDO was seen as being more diversified, and hence less risky, than the underlying RMBS. In fact, this was not the case because if there was a downturn in the national, as opposed to the regional, housing market, which did occur, the value of all the RBMS in a CDO would fall simultaneously.

The move from 'originate and hold' to 'originate and distribute' caused by securitization meant that the risk was transferred to the purchaser of a RBMS or CDO. This removed the need for the originator to undertake detailed due diligence. The subprime mortgages were accompanied by extensive fraud on the part of the mortgage loan originators who, working on commission, encouraged 'liar loans' and misled low-income borrowers as to the true cost of their mortgage – often persuading them to take out more expensive mortgages than they could afford.

The assessment of the riskiness of the CDOs was relegated to the three government approved rating agencies and these relied entirely on statistical methods and flawed computer models. Their methodology had no allowance for a fall in house prices (it was not in their data). There were also the consequences of the serious conflict of interest arising from the fact that the banks paid the rating agencies for their services (White, 2009). "The crisis could not have happened without the rating agencies" (FCIC, 2011, p,xxv).

At the end of the day, the collapse of the banking system was due to the eventual fall in house prices after the bubble burst. One implication of this was the mortgages of, especially, the low-income household could no longer be refinanced. This together

with the end of the many two-year teaser rates with low, or zero, mortgage rates, and their subsequent sharp rise, led to a marked increase in mortgage default rates. This precipitated a collapse in the value of the previously AAA-rated CDOs. However, this was not the sole cause of the collapse in the banking system. After all, it is sometimes overlooked that over the period 2000 to 2002, eight of the ten largest mortgage originators went bankrupt. This did not then precipitate a banking crisis. So what was the reason for the 2008 crisis?

An important factor in the subprime crisis was the rapid growth of credit default swaps (CDS). These have been likened to a form of insurance. If it was considered that the CDO was likely to default, it would be possible to insure against this by paying a recurring premium. In the event of a default (a 'credit event') the insurer would pay the cost of the default. The CDS were unregulated and, consequently, the insurer did not have to set aside reserves in case the default actually occurred. Moreover, unlike other more conventional insurance policies, CDS did not require any 'insurable interest'. This meant that any number of CDS could be taken out on a single CDO. Consequently, they could be seen more as financial instruments for speculation, or gambling, than for insurance. Furthermore, CDS could be, and were, bundled into 'synthetic CDOs' and traded. These did not include any RBMS and did not make any direct contribution to financing house purchases.

With the rapid growth of CDOs and on a closer examination of the underlying loan documentation, financial institutions such as hedge funds, and some investment banks, considered that there was a substantial risk of subprime mortgage defaults and hence a collapse in the value of the RBMS underlying the CDOs. These financial institutions began to take out CDS to short the CDOs and found a willing counterparty in, especially, the insurance giant AIG-FP. This financial institution, drastically underestimating the degree of risk involved, saw the premiums as money for (almost) nothing.

In 2007, the total value of CDS reached just over \$60 trillion compared with the value of subprime mortgages of \$1.3 trillion. With the downturn in house prices and the increase in defaults, the true value of the CDOs (the so-called toxic assets) became

unknown. This resulted in the almost overnight downgrading in their ratings by the credit rating agencies and the interbank (repo) market froze. It was the large volume of CDS that made the banking collapse so severe (Greenberger, 2008). According to Buckley (2011), “If the problem created by subprime debt is rated ten, that created by credit default swaps justifies ... a rating of 100 or more” (p.74). The rest is history.

2.1 Early warnings that were ignored

Long before the subprime crisis, there had been increasing concerns about the rapid increase in over-the-counter (OTC) derivatives and their lack of regulation. A derivative is a financial security whose value depends upon that of an underlying asset, or group of assets. RBMS, CDOs and CDS are all derivatives. Derivatives were first used in the mid-19th Century for hedging commodity prices and were sold on regulated exchanges such as the Chicago Board of Trade. The development of the unregulated OTC derivatives consisted of largely interest swaps and exchange-rate swaps and options. They were contracts between individual parties and were not sold on the exchanges. The breakdown in the Bretton Woods agreement in 1971, which led to greater volatility in exchange rates and interest rates, was the catalyst for their development. By the 1980s, as we shall see, the independent regulatory body, the Commodities Futures Trading Commission (CFTC) became increasingly worried by the rapid growth of the unregulated OTC derivatives that in 1987 the CFTC moved to regulate these financial instruments.

To the investment banks, and indeed the financial system as a whole, any regulation was an anathema, as, almost by definition, it restricted how they traded and, hence, reduced their profitability. To counter the threat of regulation a powerful industry association was set up in 1985, namely the International Swaps and Derivatives Association (ISDA).

By the 1990s, the warning lights were already flashing about the dangers of OTC derivatives. In 1994, the County Treasurer of Orange County (a large municipality in

California) bought with public money 'inverse floater' derivatives. He was advised by Merrill Lynch that interest rates would be bound to fall and the value of the derivatives would rise. The bonds had been rated AA by both Moody's and S&P. However, Greenspan, at this time, unexpectedly raised the Federal Funds Rate. The consequent fall in the value of the derivatives (which were immediately downgraded to CCC) bankrupted the municipality. Merrill Lynch eventually agreed to pay Orange County \$400 million, by way of damages, of the \$1.7 billion that had been lost. There were other well-publicized dramatic losses by relatively unsophisticated buyers from the purchase of derivatives. Most notable were Proctor and Gamble and Gibson's Greeting Cards, badly advised by Bankers Trust, at the time one of the US's largest banks. The subsequent court case showed the substantial degree to which Banker's Trust fraudulently traded on the ignorance of the firms about the complexity of derivatives.

The legal action was the only reason that the CFTC found out about the fraud. As there were no reporting requirements, the government did not even have information about the size of the OTC derivatives markets. As a result, *Fortune Magazine*, for example, published a long analytical piece about the dangers of derivatives (Loomis, *et al.*, 1995) and there was increasingly widespread concern about the use of derivatives.

At about this time, the US General Accounting Office (GAO) (1994) issued a highly critical report of unregulated derivatives, exposing what it saw as their serious limitations. The Report was concerned that the largest five banks and top seven security companies accounted for about 90 percent of the total value of OTC derivatives. The report warned that the sudden failure, or withdrawal from trading, of these dealers could cause severe liquidity problems "that could pose risks to others, including federally insured banks *and the financial system as a whole*" (p.7, italics added). Indeed, the GAO report stated explicitly that any crisis could be global. The report also noted presciently that the government may have to intervene to avert a systemic crisis and "the Federal Reserve may be required to serve as lender of last resort to any major U.S. OTC derivatives dealer, whether regulated or unregulated"

(p. 12). A set of four bills of derivative regulations were submitted to Congress in 1994.

So what happened? The industry association, the ISDA, alarmed by what it saw as an attempt to reduce the profitability of the derivatives market, mounted a vociferous lobbying campaign to prevent it. In 1993, the Group of Thirty (G30), an influential independent organisation of economists, academics and bankers, had published a detailed set of guidelines for derivatives. These were less stringent than those of the GAO and did not have regulatory force. The ISDA campaign was successful. The four bills that had been brought before Congress were dropped. Self-regulation, using the G30 voluntary guidelines, was seen as sufficient (Tett, 2010. pp. 43-47).

Three years later, in 1997, the small CFTC, under the chairmanship of Brooksley Born, made another attempt to open discussion about the desirability of regulation of OTC derivatives. Born (1998) was particularly concerned about swaps (Roig-Franzia, 2009, Schmitt, 2009), which we have seen were to play such a destructive role in the subprime crisis. The CFTC decided merely to issue a 'concept release', or a consultative paper, to solicit views on the regulation of OTC derivatives.

Federal Reserve Chairman, Alan Greenspan, Treasury Secretary Robert Rubin and his deputy Lawrence Summers and former Securities and Exchange Commission SEC chairman Arthur Levitt (who, after the subprime crisis, admitted he had been wrong) vehemently opposed even this modest proposal. However, the CFTC went ahead anyway. Greenspan *et al.*, successfully persuaded Congress to block any attempt even to consider regulation (McLean *et al.*, 2010, chapter 7). Congressional action was required because the CFTC was an independent regulatory body outside the jurisdiction of any other regulatory authority, such as the Federal Reserve.

The reasoning behind this action was, as Greenspan (1997), in a review of the history of the derivatives market, stated that "no market is ever truly unregulated. The self-interest of market participants generates private market regulation". In the case of off-exchange OTC derivatives, he further stated "private market regulation is quite effectively and efficiently achieving what have been identified as the public policy

objectives of government regulation”. Consequently, Greenspan, in 1997, considered that there was no need for regulation because the “derivatives market involved Wall Street professionals, who could patrol themselves.” (Schmitt, 2009). Greenspan (1997) went so far as to suggest that there could be parallel markets (one regulated and one unregulated) and institutional investors should choose which they considered to be more effective.

The upshot was that in 1998 legislation was passed temporarily barring the CFTC from taking any action on derivatives, and, in 2000, the Commodities Futures Modernization Act effectively permanently prevented the CFTC from regulating OTC derivatives. The market grew unchecked. This was probably the last opportunity to have prevented the subprime crisis.

Born left the CFTC in April 1999 (McLean *et al.*, 2010, pp. 101-105, Roig-Franzia, 2009, Schmitt, 2009). A year after the CFTC was effectively emasculated, in 1998, the hedge fund Long-Term Capital Management collapsed, confirming Born’s (1998) worse fears about OTC derivatives. However, as we shall see, even after the demise of LTCM still nothing serious was done about regulating derivatives.

3. The Collapse of Long-Term Capital Management: The Canary in the Mine

More than any crisis, the collapse of Long-Term Capital Management (LTCM) (Born, 1998; Edward, 1999; Lowenstein, 2001; Allington *et al.*, 2012) should have led to a serious reappraisal of the lack of regulation, not just of hedge funds, but of the whole banking system and especially OTC derivatives. The extent of potential damage that the collapse of LTCM could have caused is best illustrated by Greenspan’s (1998) testimony in the aftermath of the collapse to House of Representatives in 1998. Here Greenspan (*op. cit.*) was justifying the actions of the Federal Reserve Bank of New York in organising a rescue, which we shall discuss further below. Greenspan (1998) commented that:

Had the failure of LTCM triggered the seizing up of markets, substantial damage could have been inflicted on many market participants, including some not directly involved

with the firm, and could have potentially impaired the economies of many nations, including our own.

What is remarkable is not this episode, but the relative absence of such examples over the past five years. Dynamic markets periodically engender large defaults.

What is remarkable, rather, is that a non-bank financial institution with only 180 employees in 1996 could, according to Greenspan (2008), nearly have caused the entirety of the US banking system to collapse. The collapse of LTCM should have highlighted the serious problem of substantial systemic risk that derivatives, combined with high levels of leverage, could cause to the overall financial stability. It should also have drawn attention to the misleading impressions of low risk that the standard Value-at-Risk (VaR) methods could cause. Importantly, the implications of the collapse were not just confined to hedge funds, but extended to the banking system.

Long-Term Capital Management was set up in 1994 with a small amount of equity for a hedge fund of around \$1.3 billion. It had an impressive management team and directors that included the Nobel Prize winners Merton and Scholes. Its methodology was to use the latest computer algorithms from modern finance and to undertake quantitative analysis of millions of data points. One of its approaches was to bet on the reduction in international bond prices (or, equivalently, spreads) in thousands of trades as the world financial markets became more integrated. Thus, an underlying assumption was that this would occur because of the efficient market hypothesis. These pairwise trades were hedged, so it did not matter whether the relevant bond market, as a whole, rose or fell. All that mattered was the spreads would narrow. Combining both its extensive off-balance sheet exposures and its on-balance sheet holdings, LTCM had \$1.4 trillion exposures with only \$5 billion of equity – a huge leverage ratio.

VaR was by now a standard method of calculating the maximum value that a portfolio could lose, say, 95 per cent of the time. It assumed that the volatility of prices

followed a fixed Gaussian distribution, but was only based on data for a relatively short time period, often only five years. For example, in the first LTCM shareholders' report the probability that the fund would lose 5 percent of its value, or less, in a typical year was given precisely as 12 percent; losses of 10 percent and 15 percent or more, were given a correspondingly smaller probability. The modellers, of course, knew of the existence of fat tails, but the latter were ignored as they could not be statistically modelled for day-to-day trading.

What caused its downfall was that while behind LTCM's strategy of thousands of trades was the prediction of convergence in sovereign bonds prices and yield spreads; in 1998 precisely the opposite occurred. The Asian Financial Crisis occurred in 1997 (completely unforeseen by such international institutions as the IMF). This was closely followed by Russia devaluing the rouble and declaring a moratorium on repaying its Treasury debt. Russian banks, which had provided hedging against this event, failed to honour their contracts (as they were entitled to do in the face of a systemic failure).

Given this unexpected crisis, there was a 'flight to quality' and to liquidity, as investors unloaded high-risk assets, or junk bonds, in all the national financial markets with the result that the market for these quickly became illiquid. This panic caused spreads to *widen*, which was the converse of LTCM's expectations and their trades.

The markets panicked and risk premia in all emerging markets rose rapidly, including those that had little connection with the Russian crisis. The share price of LTCM fell dramatically and bankruptcy loomed.

As we have seen, the potential bankruptcy was viewed with alarm by the Fed. This was not because it was 'too big to fail', but because it was 'too interconnected to fail'. In other words, it was involved in so many trades with other financial institutions that there was the danger of a chain reaction and a systemic crisis occurring. Most of the counterparties with LTCM were unaware of the existence of the many other counterparties. As McDonough, Chairman of the New York Fed, stated, it was not just the adverse effects on LTCM counterparties that was cause for concern, but the fact

that there was the distinct probability of a general drying up of credit, in much the same way as occurred later in the subprime crisis.

The Federal Reserve Bank of New York brokered a rescue of LTCM, with a great deal of persuasion, by 14 banks (with two refusing). The Fed, mindful of the charge that it was increasing the problem of 'moral hazard', repeatedly stressed that this could not occur as no public money or guarantees had been involved. However, many commentators remained unconvinced (see Dowd, 1999).

The fact that LTCM had, by the admission of Greenspan, nearly brought down the US banking system, remarkably did not change his perception that the level of regulation was still satisfactory. In fact, quite the opposite occurred. There was the inevitable post-mortem, notably the hearing on Hedge Funds Operations held before the US House of Representatives (1998). Here, Greenspan justified the fateful strategy taken by LTCM in terms that bordered on hyperbole: "But many of the things which [hedge funds] do ... tend to refine the pricing system in the United States and it is that really exceptionally and increasingly sophisticated pricing system which is one of the reasons why the use of capital in this country is so efficient. It is why productivity is the highest in the world, why our standards of living, without question, are the highest in the world. I am not saying that the cause of this great prosperity is the consequence of hedge funds... What I am saying is that there is an economic value here which we should not merely dismiss" (US House of Representatives, 1998, pp.93-4). Thus, according to Greenspan, LTCM was caught out by an extreme financial event that he dismissed as unlikely to occur again. This ignored the fact that financial crises regularly occurred in the US and the rest of the world (Reinhart and Rogoff, 2011).

In 2005, Greenspan further commented that "The data seem to have resolved the debate. In the United States, the Commodity Futures Modernization Act of 2000 [which prevented the regulation of OTC derivatives] has permitted healthy competition between the exchanges and the OTC markets and both sets of markets are reaping the benefits" (2005, p.1). Yes, this was only three years before the very

same OTC derivatives brought about the worse banking crisis since the Great Depression.

Greenspan (2004) stated that, “these increasingly complex financial instruments have contributed, especially over the recent stressful period, to the development of a far more flexible, efficient and hence resilient financial system than the one that existed just a quarter-century ago”. But this view was also shared by others lulled into a sense of false security by the years of the Great Moderation.

Consequently, having had a nasty scare in 1998, the financial authorities in the US and the financial institutions promptly forgot the lessons of LTCM, only to be forcefully reminded of them a decade later. In fact, it was only one year later (in 1999) that the Glass-Steagall Act of 1933 was finally repealed, having been progressively watered down over the previous two decades.

What were the lessons not learned from the collapse of LTCM? The first is that the failure of even a relatively large financial institution, *per se*, is not the main danger. It is the problem of *systemic* risk that looms large. Even with strong and objective risk management and the use of VaR, it is almost certain that the contagion effects will not be fully accounted for. It was a failure to take this into account, and to let Lehman Brothers fail, that exacerbated the subprime crisis. The problem was that VaRs were calculated using short-run data and were based on the normal distribution. As such they grossly underestimated the probability of extreme events, such as the Asian financial crisis (1997) and Black Monday, 19 October 1987, when the stock exchanges fell between 20 and 40 percent the world over for no apparent reason. VaR seemed to work most of the time, except when they were most needed (Mandelbrot, 2004; Taleb, 2007; Allington *et al.*, 2011). What is remarkable is that in 2004 the SEC, after pressure from the investment banks, allowed these banks to use VaR for the risk assessment of securities in markets that were liquid, which included CDOs (Lowenstein, 2010, p.63). At the same time, Basle II’s preferred measure for measuring risk was again the discredited VaR.

At the same time the rise of New Classical Economics, rational expectations, real business cycle theory and the theory of rational expectations came to dominate macroeconomics. Indeed, in the year before the crash, there was a remarkable degree of complacency amongst neoclassical macroeconomists. All the major issues in macroeconomic policy had been solved (see, for example, Goodfriend, 2007). However, this merely confirmed the more pragmatic ideological approach of Greenspan (the master of economic detail) concerning the need for little regulation. In fact, dynamic stochastic general equilibrium (DSGE) models played little direct role in the setting of macroeconomic policy in the UK (King 2017, Farmer, 2018, p. 115). In the U.S., the philosophy of the libertine Ayn Rand had more influence on Greenspan than any DSGE model. As the Governor of the Bank of England, Mark Carney (2018, p.2) put it “markets always clear” is *Lie II* (Carney’s *Lie I* is “this time is different”).

Views about the need for little regulation were further confirmed by the development of mathematical finance and efficient market hypothesis. Both financial traders and most financial economists uncritically accepted the assumptions underlying the valuation of derivatives. The assumption is that risk is simply measured by past volatility together that the fact that no account is taken of uncertainty leads to a serious underestimation of systemic dangers. It results in excess confidence and the ‘illusion of control’. Capelle-Blancard (2010, p.79) cites a survey in 2004 conducted by the financial industry’s trade association, ISDA, of finance professors in the top 50 business schools. Only one per cent of the respondents considered that derivatives could have a negative impact on the global financial system. Any problems with derivatives were seen as being simply due to the practitioners’ lack of knowledge of the financial models and how to use them correctly. “This is nothing less than a simplistic view”, as Capelle-Blancard (2010, p.79) put it. It was only much later that Greenspan (2013) came to appreciate the important role that uncertainty and ‘animal spirits’ played in financial markets, together with ‘fat tails’.

Derivatives, while they might not increase market volatility, substantially increase financial systemic risk, as we have seen. There had been a few warnings about

uncritically relying on the mathematical financial models. Merton ironically, just before LTCM crashed, is reported to have said that risk cannot be eliminated just because it can be measured (Capelle-Blancard, 2010, p.79). In the case of LTCM, it was the very mathematical strategies designed to reduce risk that nearly brought down the US financial system, not a failure theoretically to understand the structure of the models, per se. The problem was the failure fully to appreciate the implications of the model's limitations.

We next turn another lesson not learned from an earlier financial crisis, namely the S&L debacle and Lie III, "markets are moral" (Carney, 2018, p.5) - another lesson not learnt.

4. The Forgotten Banking Crisis: The Savings and Loans Debacle, 1980-1989

Second only to the subprime crisis, the worst US banking crisis since the Great Depression is what has come to be known as the Savings and Loans (S&L) debacle. This commenced in 1980 and lasted until about 1989, costing in total about \$US 160 billion, the majority of which was picked up by the US taxpayer. The debacle should have been instructive because it clearly showed not only the dangers of financial deregulation, but also the problems caused by the weak, or indeed lack of, enforcement of existing regulations.

Moreover, importantly, it showed that financial fraud or 'control fraud', as it is sometimes known, while not the cause of the S&L crisis, greatly magnified its severity. The banking system, by its very nature, is more prone to fraud than any other industry, a fact that seemed to have been forgotten in the run up to the subprime crisis. Malfeasance was widespread in the subprime crisis and is still widespread today in the banking system. So, what was the cause of the S&L crisis and why did it become so serious, given the previous good track record of the S&Ls until 1980?

4.1 The Early Years of the S&Ls

Savings and Loan associations (S&L) (or Build and Loans, as they were initially known) were first established in 1831. S&Ls are also known as thrifts. They were similar to the British Building Societies and took deposits, largely from working-class households, and issued long-term mortgages to them. Like other banks, they were severely hit by the Great Depression and became subject to greater government oversight.

Consequently, two main reforms were brought in during the 1930s. The first was the formation of the Federal Home Loan Bank Board (henceforth the Bank Board) to grant charters to some of the S&L institutions (there were also 12 regional Federal Home Loan Banks). A number of other S&Ls were state-chartered, but their regulatory conditions were very similar to the Federal-chartered institutions. The second reform was the creation of the Federal Savings and Loans Insurance Corporation (FSLIC), which guaranteed S&L deposits and was financed by a levy on the thrifts. By 1980, the S&Ls were responsible for about one half of all US mortgages and, until that date, there had been very few cases of financial mismanagement.

The S&Ls, in providing mortgages, were subject to the inherent problem of maturity mismatch that faces any bank. In 1966, Regulation Q was applied to the S&Ls. This restricted the limit of level of interest rates payable on the various types of deposit accounts, but it had previously only applied to commercial banks. The S&Ls were given a small, but important, interest rate differential over the commercial banks to give them a competitive advantage. At this time, it was difficult for individual savers to move their funds to other higher interest-rate paying financial institutions and they were, in fact, cross subsidising the mortgage holders.

The crisis occurred almost overnight. The main reason was the rapid increase in interest rates. To fight inflation, Volker, the then Chairman of the Fed, suddenly raised interest rates, from 10% in 1979 to peaking at just over 19 % in 1981.

Because of Regulation Q, in 1979, the S&Ls could only offer a deposit rate of 5.5%, which says it all. Financial developments by now meant that there were now other financial institutions paying higher interest rates on deposits that were accessible to the S&Ls' traditional savers. Although Regulation Q for the S&Ls was phased out from

1980, there was still the problem that even when the thrifts raised their deposit rate, they still received the interest payments from the original mortgage loans at a low fixed rate. This led to a huge interest rate mismatch. The market value of the mortgages held by the S&Ls plummeted, although under Generally Accepted Accounting Principles (GAAP) they were still valued at their historic cost.

By 1982, 414 out of 3,287 S&Ls insured by the FSLIC were bankrupt and many more were technically insolvent. Their net income in 1981 and 1982 was minus \$4.6 billion and minus \$4.1 billion respectively and the tangible net worth of the entire S&L industry was virtually zero. In 1983, it was estimated that it would cost roughly \$25 billion to compensate fully the insured depositors of the failed S&Ls, but the S&Ls insurance fund (the FSLIC) had only about \$6 billion in its coffers (Federal Deposit Insurance Corporation, [FDIC] 1997, p.169). The Reagan administration, with its aim of balancing the budget and cutting taxes, was not prepared to bail out the FSLIC. Moreover, there was, at that time, concern about alarming the public and causing runs on the S&Ls if their financial distress became known.

Consequently, there was an immediate twofold reaction on the part of the administration and the Bank Board to the crisis. The first was to pretend that there was no serious crisis and the second was rapidly to introduce de-regulation that actually accentuated the problem.

4.2 Reactions to the Immediate Crisis

There were two major reactions to the S&L crisis by the regulatory authorities, namely, forbearance and deregulation.

(i) Forbearance

The first strategy was based on the assumption that losses of the thrifts would be only temporary and would be automatically corrected as interest rates fell. If the 'insolvent' thrifts could be allowed to continue operating until this happened, then their financial problems would resolve themselves. Consequently, the view was taken that S&Ls should be granted regulatory forbearance until interest rates had returned

to levels that are more normal. Other regulatory requirements were actually weakened; such as reducing the net asset requirements and allowing losses from the high interest rates to be deferred.

One of the more remarkable incidents of creative accounting that was permitted was the treatment of 'goodwill' that allowed many S&Ls to avoid insolvency. If an insolvent S&L was taken over by a solvent S&L, then, so the argument went, it could not therefore be 'insolvent'. Why would a solvent S&L takeover an insolvent S&L? Consequently, the deficit on the balance sheets of the latter was covered by an offsetting credit due to the value of 'goodwill', even though the latter was, in practice, negligible.

At one stage, the S&L industry even suggested that *all* the S&Ls should mark-to-market their assets and the difference between this figure and the original value of the mortgages be offset by the value of goodwill. This would remove the need for any mergers, but was a step too far. Nevertheless, it can be seen how this method of accounting led to a plethora of takeovers amongst the S&Ls. "Both the buyer and the S&L it was about to acquire would, in 1979-1982, have reported losing money. The merger would occur, and, miraculously, the combined entity would almost immediately be profitable – extremely profitable. It is very difficult to take supervisory action against a firm that is profitable" (Black, 2013, p.27).

(ii) Deregulation

Legislation was also introduced in 1980 and 1982 that actually increased the final cost of the crisis. The main Acts were the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA) and the Garn-St Germain Depository Institutions Act of 1982 (Garn-St Germain). These acts reduced the net worth requirements of the S&Ls and gave a legal basis for capital forbearance. A long overdue move was the introduction of adjustable-rate mortgages (ARM) mortgages. As we have noted above, Regulation Q was phased out which after 1981 made the S&Ls more competitive in the money markets.

These Acts effectively deregulated the thrifts but without tightening supervision. In fact, the existing supervision was woefully inadequate. There were the examiners, who scrutinized the S&L accounts and the supervisors who were the only people who could issue directives and compliance orders to the S&Ls. The examiners reported to the Bank Board and the supervisors to the regional FHLBs, which led to a serious lack of communication and a degree of mistrust. “Even the most diligent S&L examiner faced considerable difficulties in reporting negative findings and seeing those findings acted upon” (FDIC, 1997, p.172). The result was that the regulators would normally pursue only ‘cease-and-desist’ orders negotiated with the S&Ls, rather than undertake legal action and would avoid cases where there was a lack of precedent. “Unfortunately, these policies undermined the effectiveness of both contemporary and future enforcement actions” (FDIC, 1997, p.172). Moreover, the problem was compounded by the Republican administration pursuing its deregulation agenda. It imposed a freeze of the hiring of regulators in 1980-81, even though the posts were funded by the S&L industry.

Importantly, deregulation allowed the thrifts to make acquisition, development and construction (ADC) loans, i.e., real estate loans. Although it allowed the S&Ls to diversify their portfolio, it led the way wide open for fraud. Also, the legislation made it possible for one individual to own an S&L. Previously, no one person could own more than 15 percent of the stock and there had to be at least 400 shareholders. The conflict of interest rules were rewritten so that management of the S&Ls could benefit from their positions in the S&L. The rules for capital requirements were relaxed and, remarkably, the consequence was that the faster an S&L grew, the lower was the effective percentage capital requirement (Black 2013, p.31). Consequently, a rapidly growing S&L had, in practice, literally a thousand-to-one leverage ratio (Black 2013 p.32).

Whatever the degree of insolvency, it was impossible for the regulators to take a fast-growing S&L into receivership. The S&Ls were now also allowed to loan up to 40 percent of their assets to the construction industry and this gave the remarkable

opportunity for accounting fraud. As the title of Black's (2013) book put it: *The Best Way to Rob a Bank is to Own One*.

The S&L crisis was ended with the Financial Institutions Reform, Recovery and Enforcement Act of 1989. The FSLIC was declared insolvent in 1986 and its role eventually taken over by the fully funded Resolution Trust Corporation in 1989. The total cost of the rescue was, as we have noted, about \$160 billion. It could have been only \$25 billion if action had been taken earlier.

4.3 How Did Control Fraud, or Looting, Occur and how Widespread was it?

Akerlof and Romer (1993) convincingly challenged the prevailing, and continuing, orthodoxy that market forces would always prevent control fraud. "The typical economic analysis [for the insolvency of a bank] is based on moral hazard, excessive risk taking and the absence of sensitivity in the premiums charged for deposit insurance" (p. 4). The last is that the same levy rate for deposit insurance is charged regardless of the risk inherent in a bank.

If a bank is in financial trouble, then, in the standard economic model, 'gambling for resurrection' may occur. In other words, excessive risks may rationally be taken on the basis there is nothing to lose if the bank would otherwise fail. Nevertheless, an owner of a bank engaged in gambling for resurrection would never have operated a thrift in a way that many owners did. They had a complete disregard for any form of due diligence on the loans. Everything points to widespread fraud. 'Control fraud' is where the owner of a financial institution uses that organization to embezzle funds, even to the extent that it almost certainly will bankrupt the bank. In other words, it occurred when the amount an owner could extract from the S&L was greater than the S&L's net worth, which, as we have seen, was typically a very small fraction of the S&L's assets.

What are the conditions for accounting fraud to flourish? The first is the government needs to guarantee the S&L's deposits through some form of federal insurance. This enables the S&L to achieve substantial deposits by raising its interest rates. In an extreme case, non-recourse loans are then made for highly speculative ventures that

look like having a high value, but in the knowledge that eventually the contracts will not be honoured. Construction projects were popular and subject to 'land flips'. This is the repeated selling of a piece of land (often at the same meeting), thereby inflating its value for loan purposes. The real estate building was often never completed and the loan was usually defaulted. Nevertheless, the S&L made 100% loans on the project, which included the commission fees from which huge bonuses were paid. The developer did not put any of his own money in and would pay the thrift substantial interest rate payments from the loan. The loan would invariably default and the developer would pocket his fees. If the loan was for genuine purposes, then reputational risk would ensure the S&L took care to ensure the developer was capable and the project carefully risk-assessed. However, with control fraud quite the opposite occurred. The S&Ls also bought high interest, but commensurately high-risk, junk bonds. However, no provision was made for their high propensity to default. In fact, the loans with the greatest returns but the highest propensity to default were the best for control fraud (Akerlof and Romer, 1993; and Calavita *et al.*, 1997)

While fraud did not cause the S&L debacle, it greatly exacerbated it. Calavita *al.* (1997) came to the conclusion that "if we assume that thrift managers are rational economic actors, deliberate insider abuse is the only viable explanation for the behaviour of insiders at the worst failures" (p.44).

Much later, in 1997, Alan Greenspan, then Chairman of the Federal Reserve Bank¹, remarkably commented to Brooksley Born (1998) as follows: "Well, you probably will always believe there should be laws against fraud, and I don't think there is any need for a law against fraud" (Schmitt, 2009). Greenspan, according to Born (1998), believed the market would take care of itself. Fraud would not occur because of the danger of reputational damage to the perpetrator. This view is very common in the literature on corporate governance theory. For example, Easterbrook and Fischel

¹ The S&L crisis largely occurred when Volker was Chairman of the Fed (August 1979 to August 1987). Greenspan was Chairman from August 1987 to January 2006. However, Greenspan had been an economic advisor to Keating and so *ex post*, although not at the time, must have been aware of widespread fraud in the S&Ls.

(1991), in a leading textbook, state that “a rule against fraud is not essential or even necessarily an important ingredient of securities markets” (p.283). Any significant financial scandal is simply due to mismanagement, incompetence, unwarranted interference by regulators, but not wrongdoing.

Akerlof and Romer (1993) consider that the cost of the fraud was about \$60 billion out of a total cost of \$140 billion. Eventually, over one thousand S&L people were convicted in ‘major’ (so termed by the US Department of Justice) fraud cases.

5 Fraud and Malfeasance in the Banking Industry

The S&L crisis demonstrated that fraud can be endemic in the banking system, perhaps more so than in any other industry, *pace* Greenspan. Ferguson (2012) has argued that since the 1980s, what are criminal actions, rather than just recklessness, have become widespread in the US financial system. Indeed, he goes so far as to term this cultural change as ‘financial criminalization’, which also reflects the views of Black (2013). This lack of ethics seems to be acceptable by some financial employees, including senior managers, partly because the gains accrue directly to the bank and only indirectly to the employee through higher bonuses. Moreover, they are seen as victimless crimes (if crimes at all) generally affecting other sophisticated financial traders - it is simply justified as a case of *caveat emptor*.

Cohn *et al.* (2014) provide some interesting experimental behavioural evidence. They took two groups of bank employees and the experiment consisted of tossing a coin ten times, where, say a head earned them \$20 and a tail nothing. These tosses were unobserved and so provided an opportunity for cheating. One group, prior to the tossing, were asked questions directly related to their banking activities, reinforcing their identity as bankers. For the control group, the questions were unrelated to the profession. Adjusting the results using controls, the first group with the ‘bankers’ identity’ displayed statistically significantly more cheating than the control group. This led Cohn *et al.* (2014) to conclude that “the prevailing business culture in the banking industry favours dishonest behaviour and thus has contributed to the loss of the industry’s reputation” (p. 88).

The risky and fraudulent actions of the banks in the run up to the subprime crisis has resulted in fines against the banks, rating agencies and other financial institution by 2017 of \$150 billion (*Financial Times*, 2017). The Bank of America accounts for about one-third of these fines, through its acquisition of Countrywide and Merrill Lynch. These fines almost all relate to the mis-selling of mortgage backed securities and related financial instruments. In the US, prosecutors have insisted on guilty pleas for other offences including money laundering (notably by HSBC) in violation of US sanctions. When all these are added up, the banks have paid \$321 billion in fines from 2007 to 2016, with more expected to be levied by European and Asian regulators.

There is evidence of widespread fraud in the origination of mortgage loans in the 2000s, largely on the part of the originators (Hendon, 2018). Furthermore, there were plenty of warnings that were ignored. If the regulators had stepped in to prevent the fraudulent granting of mortgages at this stage, it would undoubtedly have lessened the impact of the subprime crisis.

The FCIC (2011), for example, reports that the Greenlining Institute, a major not-for-profit housing group, met with Greenspan annually from 1999, yes 1999, and warned him of the “growth of predatory lending practices” (p.9). Similarly, Federal Governor Gramlich listened sympathetically to similar complaints during the 2000s, but was unable to persuade the Fed to act. The fraudulent mortgage practices began in the mid-1990s. However, it was only from 2004 when the loans were packaged in CDOs and billions of dollar bets taken on their failure, through CDS and synthetic-CDOs, that they became capable of bringing down the financial system.

Unsuccessful attempts were made by Cleveland, Ohio, in 2000, where ‘liar loans’ were rife, to persuade the Fed to use its 1994 powers, under the Home Ownership and Equity Protection Act (HOPEA). In the same year, community leaders in several states approached the Office of Thrift Supervisions (OTS) to crack down on exploitative practices. What was worse was not just the indifference of the Fed, but the fact that the Office of the Comptroller of the Currency (OCC) and the OTS acted to prevent the states from enforcing rules against national banks and thrifts that the latter regulated. The fraud continued to grow, despite the opinion of one Assistant

Director of FBI that the problem ‘could have as much impact as the S&L crisis’. The red lights were flashing.

The US Permanent Subcommittee on Investigations (PSI), which reported in 2011, undertook some very detailed case studies. It looked in detail at Washington Mutual (WaMu), the US’s largest S&L bank, together with its subsidiary Long Beach Mortgage Company, and its regulator the OTS. WaMu was one of the US’s largest issuers of subprime mortgages and mortgage backed securities. The PSI concluded that WaMu and its subprime lender Long Beach Mortgage, “engaged in a host of shoddy lending practices that produced billions of dollars in high risk, poor quality mortgages and mortgage-backed securities They also designed compensation incentives that rewarded loan personnel for issuing a large volume of higher risk loans, valuing speed and volume over loan quality” (PSI, 2011, p.3)

Moreover, the WaMu management had “compelling evidence of deficient lending practices in internal emails, audit reports and reviews” (PSI, op. cit., p.3). This included evidence of ‘extensive fraud’ that the senior management did nothing about. The OTS was also aware of these fraudulent practices, but was content to allow the bank to sort it out itself. This has strong parallels with the Savings and Loans debacle, where, as we have seen, ‘cease and desist’ orders were regularly issued by the regulators, rather than prosecutions undertaken for which the regulators had insufficient resources.

The conclusions of the PSI (2011) could have been written about many of the thrifts.

“Hindered by a culture of deference to management, demoralized examiners, and agency infighting, OTS allowed the bank’s short term profits to excuse its risky practices and failed to evaluate the bank’s actions in the context of the U.S. financial system as a whole” (p.5).

See also Fligstein and Roehrkasse (2016) for further details of fraud in the subprime crisis.

5.1 ‘Too Big to Jail’ and ‘Moral Hazard’

As of 2018 only 47 bankers worldwide have been jailed for the part they played in the financial crisis (the number excludes rogue traders who were not directly related to the crisis and associated bank collapses). Of the 47 convictions, 21 were convictions for the Icelandic Banking Crisis; there were 11 convictions in Spain, 7 in Ireland and one in each in Cyprus, Germany, Italy and the US.

To the extent that fraud and malfeasance was a fundamental cause of the crisis, the question arises as to why there were no criminal prosecutions of either individuals or the banks. This is even though some banks were given fines of several billion US dollars. The penalties, consequently, fell entirely on the shareholders who, because of the divorce of ownership from control, had no say in any of the disastrous decisions made by the banks. Given the statute of limitations in the US of five years, it is likely there will now be no prosecutions with respect to the subprime crisis.

Attorney General Holder, in testimony before the Senate Judiciary Committee on 6 March 2013 opined that some financial institutions have become “so large that it makes it difficult for us to prosecute them”. Because of the widespread concern, to say the least, that his statement invoked, Holder backtracked on 15th March 2013, again before the Senate Judiciary Committee. However, as we shall see, his comments arose in respect of the failure of the Department of Justice (DOJ) to prosecute the US arm of HSBC. This essentially contradicts the Attorney General’s recantation.

The fact that there were no criminal prosecutions raises a new type of ‘moral hazard’. If bankers believe that they can act fraudulently and keep their bonuses without fear of criminal action, then what is to prevent similar future actions occurring in the context of complex banking decisions? Moreover, the US criminal justice system had success in prosecuting those involved in the junk-bond crisis (Michael Milken), Enron and other large corporate frauds (Jeffrey Skilling, Bernie Ebbers) and over 1,000 bankers were indicted after the S&L debacle. So why were there no prosecutions for the more serious subprime crisis?

Rakoff (2014), a US District Judge in New York, has analysed this problem and provides some compelling insights. To prove fraud on the part of high-level management, the US Department of Justice (DoJ) must prove intent, which is difficult when considering senior management, who operate several tiers above the trading floor. But given the widespread evidence of fraud within the banks (including 'suspicious activity reports') the failure of top management to make inquiries is what is legally known as 'wilful blindness/ or 'conscious disregard' and has been sufficient in the past to prove intent.

A second excuse made by the DoJ is that the buyers of these eventually worthless financial instruments were sophisticated bank traders and were not relying on the assurances of the sellers as to their worth. As such, they were fair game. This was the view of Breuer, then head of the DoJ's Criminal Division. However, as Rakoff (2014) points out, this is a surprising misreading of the law, where reliance is never required to be proved. If it were, a seller could lie with impunity if the buyer was a sophisticated buyer.

5.2 The Case of HSBC and Fraud Post-2008. What Needs to be Done?

Finally, the argument has been made that bringing prosecutions against the large banks may actually materially harm the US, and possibly, the world economy. This 'too big to jail argument', of course, violates the notion of the equality of the law and prosecuting the high-level executives is highly unlikely to bring down a financial institution. The fact that a policy of 'too big to jail' is still sometimes followed is evidenced by the case of HSBC.

HSBC was found in 2012 by the Department of Justice (DoJ) to have undertaken 'blatant' (DoJ) criminal behaviour (laundering, both inadvertently and deliberately, hundreds of millions of US dollars of drug cartel money and processing financial transactions on behalf of Cuba, Iran, Libya, Sudan and Myanmar). This had occurred for several years until 2010.

“The conduct occurred within HSBC locations around the world, with the knowledge, approval and encouragement of senior corporate managers and legal and compliance departments” (US Treasury Press Release, 2011).

“The record of dysfunction that prevailed at HSBC for many years was astonishing” reported Assistant US Attorney General Breuer (*Financial Times* 2012).

The bank agreed to pay a fine of about \$1.9 billion. However, remarkably this was under a ‘deferred prosecution’, which avoids a criminal charge being brought against the bank or bank employees. This is offered on condition that a bank agrees to take measures that prevent it from happening again.

A report was subsequently published by the Republican Staff of the Congress Committee of Financial Services, entitled *Too Big to Fail* (2016).

It found that the DoJ’s Asset Forfeiture and Money Laundering Section had internally recommended that the DoJ should prosecute HSBC for criminal violations in September 2012. However, before a decision could be made, the UK’s Financial Services Authority (FSA) and the then Chancellor of the Exchequer, Osborne, intervened, with the latter writing to Chairman Bernanke and Secretary Geithner. Osborne contended that prosecuting a “systematically important financial institution” such as HSBC “could lead to [financial] contagion” and pose “very serious implications for financial and economic stability, particularly in Europe and Asia” (U.S. Committee on Financial Services, 2016, p.14).

One of the concerns of the UK government was that if a criminal prosecution was successful, as the DoJ internally conceded was very likely, the US would consider revoking HSBC’s charter to operate in the US. This would have undermined the UK’s competitive position in banking. Moreover, the decision confirms that even after the Dodd-Frank Act, in practice if not in theory, some banks were deemed by the US and UK governments still too big to fail, whatever the cause.

The argument is that while senior managers of the banks were complicit in fraudulent activity, for various reasons it was easier, or perhaps only possible, to pursue civil

action against the large banks. While more of the FBI were transferred from counter-terrorism duties to fight fraud after 2008, much experience of dealing with fraud had been lost. Moreover, given the complex nature of the frauds, it would be difficult successfully to prosecute the senior managers who could use the bank's resources to hire the best attorneys to represent them.

A study by Garrett (2016) found that the number of prosecutions of banks in the US had reached record numbers in 2015. But as he points out, the fines, although often seeming large in absolute terms, are tiny compared with the banks' capitalisation and banks receive no greater fines for recurring convictions. "The outcomes suggest that the 'too big to jail' argument ... retains currency and applies to banks that commit crimes repeatedly" (Garrett, *op. cit.*, p. 43). The danger is that fines on banks simply become to be regarded as part of the costs of doing business, so long as CEO and other senior managers escape prosecution. The few convictions of bank employees tend to be of relative junior members.

What is worrying is the number of fraudulent activities of the banks that have come to light and which post-date the subprime crisis. A notable case is JP Morgan where one of its traders, the so-called London Whale (Bruno Iksil) lost \$6.2 billion from using CDS in 2012. Ironically, this occurred in the bank's Chief Investment Office, whose remit was to hold down the Bank's risk level. A senate report concluded that JP Morgan mislead both investors and JP Morgan's audit committee. The US Permanent Subcommittee on Investigations stated that risk limits were breached more than 300 times before the bank switched to a more lenient risk-evaluation criterion. Attempts were made to hide the losses from senior management and the regulators. JP Morgan ultimately paid more than \$1bn and admitted wrongdoing to settle related US and British investigations. The CEO, Dimon, took a 50% pay cut, after previously dismissing the episode as a 'storm in a teacup'.

Other notable fraudulent activities include the rigging of LIBOR (London Interbank Offered Rate) rate, which started as long ago as 1991. LIBOR is the interest rate that banks report they charge each other and underpins a multitude of other rates.

Significant reforms were introduced and LIBOR is now regulated by the Financial Conduct Authority. It is proposed that LIBOR will be based on actual transaction rates by the end of 2021.

The resolution of the misselling of ineffective and inappropriate Personal Protection Insurance by the UK banks ended in August 2019 having been started by the Financial Services Authority in 2005. The repayment of the premiums will run into several billion pounds. The Lloyds Banking Group alone have already paid out £18 billion. The above are only a few examples of post 2008 banking scandals. For a more comprehensive list see the RepRisk (2016) report of ten years of global banking scandals, 2006-2016.

A potential powerful legal weapon that US regulators have is the Sarbanes-Oxley Act of 2002, which makes it a criminal offence for corporate executives to knowingly certify inaccurate financial reports. Furthermore, the Act requires public companies to have internal controls such that investors can have reasonable assurance about the companies' financial position. Senior management is required to share key information with important decision makers, such as the board of directors. The Act was brought in because of the fraudulent activity at Enron. However, as in the case of JP Morgan, the regulators have surprisingly never used the Sarbanes-Oxley Act in a criminal prosecution, only in civil actions.

In the UK, the Governor of the Bank of England, Carney (2018), emphasised the similar regulatory role of the UK Senior Managers Regime, which came into force in 2016. This gives firms a requirement to re-establish clear links between a senior manager and the post's responsibilities and accountability. Firms must annually certify that the senior managers are fit and proper to fulfil their role. However, as this is merely the encapsulation of a voluntary code, it is a moot point whether its existence at the time of the subprime crisis would have made any significant difference.

Nevertheless, this is an important issue. As Lagarde (2018), the Managing Director of the IMF, put it: “There is one other important area that has not changed much—the area of culture, values, and ethics. ... The financial sector still puts profit now over long-range prudence, short-termism over sustainability. Just think of the many financial scandals since Lehman”. Yet the banking culture is likely to be hard to change. The S&L crisis did little to change it in the US.

6 The Aftermath of the Subprime Crisis: The New Regulatory Environment

6.1 The Dodd-Frank Act

The severity of the subprime crisis led to major financial regulatory reforms that were the most radical since the Great Depression. In 2010, the Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act, which introduced sweeping reforms (however, at the time of writing, February 2019, still not all have been fully implemented. Moreover, President Trump has said many times he would like to repeal this act). These rolled back much of the financial deregulation that had steadily occurred over the post-war period, culminating in 1999 with the repeal of the Glass-Steagall Act of 1933. The new US legislation was extensive, with 225 new rules encompassing 11 agencies. The Act directed the Federal Reserve Bank to put in place enhanced regulatory requirements for banks with assets more than \$50 billion, namely the Systemically Important Financial Institutions (SIFI). The Fed introduced three categories of SIFIs. These are banks with (1) assets of more than \$50 billion, (2) assets of more than \$250 billion or foreign exposures of more than \$10 billion, and (3) G-SIBs (Globally-Systemically Important Banks). The last were the banks deemed too big to fail and were categorized on the basis of a number of factors including their asset size and degree of interconnectedness in the banking system.

It has been suggested that smaller banks by asset size should be subject to the interconnectedness criterion (Office of Financial Research, 2017). The case for this, as we have noted above, is strongly supported by the collapse of LTCM, where it was its

degree of interconnectedness, rather than its asset size, that caused turmoil in the US banking system.

The Act was heavily partisan, supported by the Democrats and opposed by the Republicans. In 2018, parts of the Dodd-Frank Act were repealed under the Trump administration, putatively to reduce the heavy cost of regulation on the regional banks. Notably, it increased the size of the Significant Important Financial Institution (SIFI) from \$50 billion to \$250 billion, leaving only 10 banks to strict Fed oversight. The Fed has the right to designate any bank over \$100 billion as an SIFI. To date, it is fair to say, there has been only minor weakening of the Act.

In this section we briefly review the effect of these new US regulations and assess their likely efficacy. There have been numerous studies undertaking this (see, for example, Acharya *et al.*, 2010, 2011; Baily *et al.*, 2017; Krainer, 2012). In a sense, the Act closes the stable door after the horse has bolted, but may prevent other horses bolting.

The Dodd-Frank Act may best be considered as falling in two areas. The first is the creation of the Consumer Financial Protection Bureau (CFPB) that was set up specifically to prevent predatory mortgage lending, especially subprime mortgages. Mortgage terms now must be easier to understand. The Act prevents mortgage brokers originating loans with a higher interest rate or fees than otherwise available or issuing mortgages that give the highest return to the originator. The CFPB also regulates other types of consumer lending, such as debit cards. Largely, this reflects the failure of the various Federal agencies, in the years immediately, before the subprime crisis to act on information about fraudulent loans. The Fed had all the necessary powers under the Home Ownership and Equity Protection Act (HOEPA) to take action, which it did not implement. As we have seen in the last section, the Fed deliberately thwarted the actions of the state authorities in much the same way as had occurred in the S&L debacle. There is now a belated requirement for greater due diligence on the part of the lenders to ensure borrowers have 'reasonable ability' to

repay a loan. This, for example, has led to a fall in credit cards being issued to those with non-prime credit scores from 29 per cent of the total in 2007 to less than 20 per cent in 2015. Ironically, this is seen by as a criticism of the Act by some and a reason to repeal it (McLannahan, 2017).

The second major effect of the Dodd-Frank Act is the establishment of the Financial Stability Oversight Council and Orderly Liquidation Authority. The former monitors, especially, the financial stability of financial institutions deemed too big to fail (i.e. those that generate systemic risk). There is also the politically contentious power for the Fed to break up banks that are deemed too large. However, one of the paradoxes of the subprime crisis is that because of the necessary bank mergers, the concentration and size of the too-big-to-fail banks has actually increased.

The regulators can also increase the capital-adequacy ratio and undertake other prudential regularity control. Importantly, there is provision for the orderly winding down of failing financial institutions so that taxpayers' money is not used. SIFIs have to provide 'living wills'. Any costs of bank failure will be levied *ex post* on the rest of the banking system. However, as critics have pointed out, this may lead to further 'moral hazard' problem, as the penalty is not levied on the failed bank. One of the problems encountered in dealing with the subprime crisis is that the Fed had no authority to deal directly with the bank holding companies, each of which may consist of several bank subsidiaries. This posed serious problems for the Fed in terms of the dealing with some failing banks. This has now been rectified by the 'single-point-of-entry' (SPOE) strategy. Overall, the Fed has more powers than before, but rather less discretion. This may not be advantageous. For example, the Fed cannot offer assistance to a particular financial institution, without offering it to all others in the same category.

The Act also introduced the so-called 'Volker rule' which, to a certain extent, reintroduces conditions of the Glass-Steagall Act and bans commercial banks from engaging in proprietary trading (i.e. using customers' deposits to trade on the bank's

behalf). This is a key factor in separating commercial and investment banking and preventing the former from using deposits in speculative trading. However, in the view of Baily *et al.* (2017) “there is little evidence that proprietary trading was a direct and major contribution to the most recent crisis” (p.25). The cause was primarily a combination of the failure to accurately price the risk of the CDOs, the gambling using CDS on the default of CDOs, particularly by hedge funds and later by the banks and the collapse of the repo and asset-backed paper debts market (Krishnamurthy, 2010). This largely occurred in the unregulated shadow banking system (Gorton *et al.*, 2012). In the US and worldwide the shadow banking system is now, and at the time of the crisis was, about half the size of the commercial banking system. One criticism of the rule is that in practice it may be difficult to identify propriety trading. Suppose a bank buys assets on behalf for a client who does not take them up. The assets therefore remain on the banks’ books – is this classified as propriety trading?

As we have seen, one of the major problems of the subprime crisis was the moral hazard problem caused by the problem of too big to fail of the larger banks. The implicit guarantee that the government would need to bail out these banks goes a long way to explain the risky behaviour of the investment banks. It reduces market discipline and imposes a negative externality as their failure has greater financial costs than those of the failed bank, *per se*. The refusal of the government to bailout Lehman Brothers and the immediate consequences of massive bailouts to the other large banks or arranged mergers merely reinforced this problem.

6.2 Stress Testing: How Effective is it?

A major change under the Dodd-Frank Act and Basle III has been a greater emphasis on bank stress testing by the regulators, with a view to seeing whether or not a bank’s capital-adequacy ratio (CAR), namely the ratio of a bank’s capital to its risk-adjusted assets, and the leverage ratio are at a satisfactory prudential level. In other words, the issue is whether, in the face of the simulated shock, they fall below a designated minimum acceptable level. A stress test is the use of a model designed to

simulate the effect of an assumed macroeconomic and/or financial shock (e.g., a steep fall in GDP followed by a recovery) on the banks' profitability and balance sheets. Congruent stress tests can be run on several banks simultaneously in an attempt to capture the effect of systemic risk.

Before the subprime crisis, beginning in the early 1990s, stress tests were largely undertaken by the banks themselves for internal bank purposes and to supplement their VaR calculations. It was not until the early 2000s that the central banks and regulatory bodies began to undertake their own independent stress models but, of course, none of them picked up the rapidly emerging problems of CDOs and CDSs.

Initially under Basle I the risk weights were set internationally, but there was lack of granularity. Subsequently, the banks used their own internal models to determine the riskiness of their asset. However, and as Haldane pointed out (2013), "for a large, complex, bank the numbers of calculated risk weights rose from five hundred to thousands, perhaps millions" (p.4). They did not have any direct effect on central bank regulatory policy and Haldane notes that risk assessment became self-regularity determined by the banks themselves.

The other measure of the ability of the banks to deal with an adverse shock is the size of the leverage ratio. This ratio is particularly important as the subprime crisis was leverage led. However, the use of the leverage ratio gave contradictory results when compared with the capital-adequacy ratio. The average risk weights nearly halved from 1993 to 2011, while bank leverage ratios rose steadily over this period. The correlation between the two indicators was minus 0.6. "While the risk traffic lights were flashing bright red for leverage, for risk weights they were signalling ever-deeper green" (Haldane 2013, p. 2). It seems almost certain that the banks had manipulated the risk weights in their internal models to their advantage on a significant scale. Haldane (2013) goes so far as to suggest it might be optimal given the uncertainty about the weights to simply assign equal weights to all the assets.

Hypothetical portfolio exercises (HPE) take a common set of portfolios and determine how much capital the banks models should set against them. These have shown the existence of extremely wide inter-bank range default probabilities and risk weights – often by 5 to 10 times and 3 to 5 times respectively. Haldane (2013) documents the extremely wide variation in the various banks’ estimates of the values of the risk indicators. The extent of this can be seen in Haldane’s (2013) observation that “one bank’s models suggesting \$1 of capital, another over \$1000, for an identical [portfolio’s] exposure” (p. 3). There is also the problem of model risk or model ‘noise’, which can be very serious and makes the cruder (but model free) leverage ratio a better guide to the overall degree of risk. Haldane (2013) concludes that a necessary regulatory reform is “to make greater use of simple, prudent metrics” (p.14) and this is being undertaken.

There have been several criticisms of stress testing. Dowd (2014, 2017) notes that, first, they are not carried out by independent authorities but by the central banks. But the latter have as one of their remits promoting confidence in the banking system. Therefore, they have a vested interest in designing the stress test so that there is a low bar for success. Secondly, with reference to the Fed, Dowd (op. cit.) is concerned that the scenarios tested are very limited and major shocks such as the collapse of the Chinese or Eurozone banking systems or major trade wars should be stressed tested. Finally, and related to this, he finds the losses of the banks under the tests were only about half those of the subprime crisis. He goes so far as to argue that stress tests are so misleading that they should be scrapped.

Dowd (op. cit.) makes two further points. One effect of stress tests is to lead to a standardization of the banks’ risk management practices. This means that in the face of adverse shock they are likely to act in similar fashion, further exacerbating the crisis. He further argues that that the good outcome of the banks with respect to the stress tests is that they have learned how to ‘game them’. Goldstein (2017) has argued that the stress tests do not place enough emphasis on fat tails, understates the importance of non-linearities and

feedback effects. They also underestimate the impact of the adverse effects in the financial sector on the real sector and *vice versa*.

Nevertheless, the importance and influence of stress tests should not be underestimated. The successful results of the 2009 US stress test (the Supervisory Capital Assessment Program) is credited with being a turning point in restoring investors' confidence in the US banking system immediately after the crash (Bernanke, 2015, p.397). More recently, the Bank of England's (2018) modelling of a 'no deal' Brexit found that all the largest seven banks passed the stress test. This involved, *inter alia*, a 4.7 percentage point fall in UK GDP and a 27% drop in the value of the pound. This provides a certain amount of confidence in the UK banking system. Stress tests are likely to continue to remain an important tool of macroeconomic regulatory policy.

6.3 Credit Default Swaps and the Dodd-Frank Act. A Phoenix Rising from the Ashes?

We have seen that the widespread use of OTC CDS was a prime cause for the subprime crisis. The Dodd-Frank Act included an attempt to remedy this by ensuring that the US swaps market was subject to a battery of regulatory controls, specified in detail by the CFTC. The Act expressly stated that this was also to cover any overseas swaps undertaken by the 'guaranteed' foreign subsidiaries of the US banks, if they could adversely affect the US economy. However, in 2013, ISDA advised its members effectively to 'deguarantee' their foreign subsidiaries. The effect of this was that even if all the financial work in creating swaps was done in the US, so long as the completed contracts were assigned to its deguaranteed foreign subsidiary, the banks would no longer be subject to the Dodd-Frank Act. Not surprisingly, the big four swaps dealers, Citibank, JPMorgan Chase, Goldman Sachs and Bank of America, who undertake about 90 percent of the US swaps trades, took full advantage of this loophole. However, the swaps still remain on the balance sheets of these banks. As these banks are "systemically important," it means that they would be eligible to be bailed out by the US, if necessary, in another severe financial crisis.

An attempt by the CFTC in October 2016 to close this loophole may well not be finalized by the Trump administration, which is committed to its repeal. In fact, there is no need for the administration to roll back this section of the Dodd-Frank Act relating to swaps because of its ineffectiveness. Given that the CDS were the major reason for the subprime crisis, this paves the way for the possibility of a second serious crisis. However, the second time around, this is more likely to involve defaults in the US on student loans, car loans and credit card debt, rather than subprime mortgages. However, Greenberger (2018) notes that the relevant statutory framework affords a state Attorney General the right to bring a so-called *parens patriae* action in federal district court to enforce, *inter alia*, the Dodd-Frank Act on behalf of the state's citizens. Greenberger considers that this kind of litigation is now badly needed to enforce the Act's extraterritorial provisions. Nevertheless, the present situation with regard to CDS and a possible financial crisis is still potentially serious.

7 Summary and Conclusions

The Chief Financial Officer of Goldman Sachs, David Viniar, famously noted in 2007 that "we are seeing things that were 25-standard deviation moves, several days in a row" (cited by Haldane, 2009, p.1). As Haldane (2009) pointed out "a 25-sigma event would be expected to occur once every 6×10^{124} lives of the universe" (p.1).

Of course, even with the danger of hindsight bias, it is clear that while the exact timing and nature of the subprime crisis could not have been foreseen, there was ample over the preceding forty years or that the financial system is dangerously fragile. Certainly, there was plenty of empirical evidence that contradicted Greenspan's view that the financial markets were efficient and needed no regulation.

The problems concerning the opaque nature of derivatives was becoming well known in the 1990s with the financial disasters of Orange County *inter alia*. The implications were well known from such magazines as *Fortune*. What was remarkable was the

blocking of the CFTC's attempt even to start a discussion of the possible dangers of derivatives in 1998.

The collapse of Long-Term Capital Management, ironically, led Greenspan to emphasise the dangers of financial interlinkages in leading to serious systemic risk. Moreover, the collapse showed the dangers of the use of the widely used Value-at-Risk models and the dangers of ignoring fat tails. Basle III and the Dodd-Frank Act have belatedly gone a long way to ensuring the stability of the banking system, but what still needs to be ensured is that regulators have a detailed knowledge of financial innovations in structured finance and their possible contagion effects in the financial system.

The S&L debacle clearly demonstrated the costs of weak regulation and the failure to give the regulators sufficient resources. We have seen that there was widespread fraud on the part of thrift owners that the deregulation facilitated. This makes Greenspan's view that reputational damage is sufficient to prevent fraud seem naïve. What is worrying, as we have seen, is the degree of fraud that continues to be perpetuated by some of the largest banks long after the end of the subprime crisis. This reflects an ethical problem endemic in the culture of the banking system, which is difficult to resolve.

The subprime crisis and its severe output effects, although precipitated by the fall in house prices, largely arose *sui generis* from developments within structured finance. Whether current bank stress tests are effective in picking up future developments, and possible resulting problems, is a matter of controversy.

To conclude with an aphorism: "Those who don't study history are doomed to repeat it, while those who *do* study history are doomed to stand by while everyone else repeats it". However, it is to be hoped that the lessons of the past have finally been learnt.

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