# Minsky's "Cushions of Safety", Systemic Risk and the Crisis in the US Subprime Mortgage Market

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## Minsky Redux

Many commentators have noted the relevance of Hyman Minsky's Financial Fragility Hypothesis to an understanding of the current crisis in developed country financial systems. Indeed, he has appeared on the pages of such traditional financial media as the *Economist*, the *Wall Street Journal* and the *Financial Times*.[2] Referred to as an "obscure economist" most references note the existence of Ponzi finance as a factor in the crisis. But this was not the most important contribution that Minsky has made to our understanding of the logic of repeated financial crises under capitalism. His analysis was based on the idea of endogenous instability – the idea that it was stability in the system that generated the behaviours that produced fragility. It was this increasing fragility that made the system more prone to an unstable response to a change in financial or other conditions relevant to the return on investment projects. He expressed this idea in terms of a declining cushion of safety in financial transactions and an increase in financial leverage that he called layering. However, the current crisis differs in important respects from the traditional analysis of a Minsky crisis and those differences have had an important impact on the way the crisis has evolved.

## Financial Fragility and the Declining Cushions of Safety

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[2] See for example the London *Economist* newspaper (Buttonwood: "Ponzificating", March 17, 2007, p. 80), *Institutional Investor* (February 7, 2007: Edward Chancellor "Ponzi Nation"); Pimco's Global Central Bank Focus (March 2007: Paul McCulley "The Plankton Theory Meets Minsky"); *Financial Times* ("What this Minsky moment means," By George Magnus, August 22 2007) and *Wall Street Journal* ("In Time of Tumult, Obscure Economist Gains Currency-Mr. Minsky Long Argued Markets Were Crisis Prone; His 'Moment' Has Arrived," By Justin Lahart, August 18, 2007; Page A1).

Of central importance to Minsky's analysis was the concept of a cushion of safety – an idea originally developed by the legendary security analyst and hedge fund investor, Benjamin Graham. The cushion covered a margin of error in anticipated returns from an investment project. Minsky analyzed the investment decision from the point of view of the difference between prospective cash receipts and cash commitments representing the margin of safety. For example, the margin of safety of a banker lending to a businessman for a particular project would be determined by the difference between the amount loaned and the required project finance, or by the realisation value of the collateral required of the borrower, or the amount of compensating deposits, or any other factor which the banker believed would allow him to recover the loan in case the expectations of the future income from the project were disappointed. The idea of increasing financial fragility is built around the slow and imperceptible erosion of these margins of safety that occurs in conditions of relative stability. When margins have been sufficiently reduced, even the smallest departure of realizations from expectations creates conditions in which firms have to deviate from the planned actions in order to meet fixed cash flow commitments. This can mean delayed payment, or distress borrowing, or even distress sales of inventory or of productive assets. Indeed the banker himself may request possession of the collateral behind the loan. The result is a debt deflation process in which 'position has to be sold to make position' and the downward pressure on prices causes rising real debt burdens. Here lower prices increase the necessity to sell and reinforce the excess supply, making it that much more difficult for the investor to fully repay the loan from asset sales.

**Edogenous Financial Fragility and Financial Instability**

Minsky's main contribution to the description of these events was to point out that they were inevitable, in the sense that sustained periods of economic stability would produce increasing financial fragility. It is become common to describe this process of endogenous creation of financial fragility as one of euphoria or bubble mania. But Minsky always maintained that bankers were inherently skeptical and insisted on margins of safety because they doubted the borrower's estimate of future cash flows. One of the reasons was that the banker was

usually better informed about the overall market environment and potential competitors than the borrower. In short, bankers were neither gullible, nor irrational. Thus, for such an endogenous evolutionary process leading to a reduction of margins of safety to take place, it must be based on something more than euphoria or excessively optimistic expectations.

Even though bankers may have a better general knowledge of local competitive conditions or the future plans of competitors, they can have no better knowledge of future conditions than anyone else. As a result, the basic determination of the decision to lend is the J.P. Morgan rule of "trust" of the borrower, of creditworthiness, not the inherently uncertain predictions of the future success of an investment project.[3] Further, since the bank is an ongoing enterprise, the banker not only wants to know how the borrower will repay the loan, but more importantly on whether the bank can lend to this client again. This will be decided primarily by past repayment performance, by credit history, as much as by the expectations of future cash flows. This implies looking backward, rather than forward.

In conditions of steady expansion where errors in estimating the future are hidden by overall expansion, it is not necessary to assume that the banker becomes less skeptical or diligent in making his credit assessments or becomes more enthusiastic and optimistic in evaluating future earnings for margins of safety to be reduced. It's just that the universe of borrowing experiences becomes increasingly positive. It is the expansion that validates more risky projects, rather than any change in evaluation on the part of the lender.[4]

The problem of declining margins of safety is then the result of the method used to evaluate risk. On the J. P. Morgan principle, this will in general be to evaluate the credit risk of the borrower and to use the credit history of the borrower to determine the decision to lend. This is not to say that the banker will not look at is the riskiness of the project itself, but as Keynes noted "our knowledge of the factors which govern the yield of an investment some

[3] According to J.P. Morgan "A man I do not trust could not get money from me on all the bonds in Christendom." Quoted in Ron Cernow, *The House of Morgan*, New York: Simon and Schuster, 1990, p. 154.
[4] This approach is outlined more fully in J. A. Kregel, "Margins of Safety and Weight of the Argument in Generating Financial Fragility," *Journal of Economic Issues*, Vol. XXXI, No. 2, June 1997.

years hence is usually very slight and often negligible."[5] It is thus reasonable that the assessment of the project will then be in terms of conventional opinion, which means by reference to the lending undertaken by other banks. Thus over time, bankers will be lending to borrowers that they previously would have refused, or to existing borrowers at declining margins of safety; and they will be concentrating lending on projects in particular areas simply because other banks are doing so.[6] As in any evolutionary process, the participants need not realize what is actually taking place: the banker does not realize that she is reducing margins of safety. Indeed as far as the banker is concerned, the ability of her clients to make the payment of interest, based on their past performance, is if anything improving. Therefore the margin of safety does not appear to be declining since the weight the banker attaches to the borrowers accumulating positive repayment history increases with continued timely repayment. It is as if a frequency distribution of success and failure becomes more and more concentrated around success as the mean, so that a two standard deviation margin of safety represents a declining absolute difference between cash inflows and cash outflows.

Thus, both the borrower and the banker become more confident, without any necessity for euphoria or excessive optimism. Increasingly optimistic expectations of ability to meet cash commitments in a cyclical expansion thus represent a rational reaction to the evaluation of past events as expressed in higher probabilities of success. But, as Keynes pointed out, this success is usually due to no particular expertise on the part of the entrepreneur, but to the expansionary environment. The results are excess borrowing, over-investment and concentration of risk.

**The Subprime Crisis, Cushions of Safety and Ponzi Finance**

While it is clear that the current subprime mortgage crisis involves both Ponzi financing and declining margins of safety, it is important to recognize that they are produced by a very

[5] J.M. Keynes, The General Theory of Employment, Interest and Money, London: Macmillan, 1936, pp. 149-50.
[6] As Keynes noted (*Essays in Persuasion*) bankers will always prefer to fail in a "conventional way" by following the decisions of others, rather than risking being unconventionally right. This is still true today as can be seen in the declaration of the former head of Citigroup Charles Prince, as questions arose over the subprime mortgage crisis: ""When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing." Reported in the *Financial Times*, July 10 2007.

different process from that described above. Following the decline in the earnings of commercial banks in the United States in the 1980s, regulations limiting them to deposit taking and short term lending were relaxed to allow a wider range of capital market activities, in particular through the creation of affiliates not principally engaged in these activities.

Section 20 of Glass-Steagall restricted commercial banks from affiliating with firms "engaged principally" in potentially profitable activities such as underwriting and dealing in securities. In a series of rulings in the 1980s the phrase --"engaged principally"– was interpreted to expand the ability of banks to engage in these activities. The Federal Reserve first authorized and exemption for such a subsidiary in 1987 and the first securitised investment vehicle was created (it is reputed by employees of Citibank London) in 1988 under this regulation. This regulatory relaxation also allowed securities firms and insurance companies to acquire certain types of depository institutions and "unitary thrifts."

Thus, the banking system that emerged from the 1980s real estate crisis was one that no longer primarily serviced business lending (pace the real bills doctrine) and was no longer primarily dependent on net interest margins for its income, but on the ability of their proprietary trading desks to generate profits and Section 20 affiliates to produce fee and commission income. This breakdown in the New Deal regulations eventually led in 1999 to a major reform of US banking regulation, the Gramm-Bliley-Leach Financial Services Modernization Act, which allowed the creation of bank holding companies carrying out virtually all types of financial activities. At the same time, the introduction of the Basle minimum bank capital adequacy standards encouraged banks to continue to increase their fee and commission incomes by moving lending off their balance sheets to unrelated affiliates.

This has produced a new form of bank operations now known as “originate and distribute” in which the bank seeks to maximize its fee and commission income from originating assets, from managing those assets in off balance sheet affiliate structures, from underwriting the primary distribution of securities collateralized with those assets and from servicing them.[7]

[7] For an early presentation of this aspect of banking and its implications for monetary policy see Martin Mayer, *The Bankers*, New York:Penguin Putnam, 1997 and *The Fed,* New York:Free Press, 2001.

Here the banker has no interest in credit evaluation, since the interest and principal on the loans originated will be repaid to the final buyers of the collateralized assets. Here the deterioration in cushions of safety caused by the evolution of the bank's evaluation of the borrower's credit risk through periods of stability plays no role. The bank is only interested in its ability to sell the asset it has originated to earn a fee or commission, not to hold it in its loan book for a return determined by the net interest margin.

**The Cushion of Safety in an Asset Securitisation**

This process of making loans without holding them is made possible by asset securitization. This usually involves the creation of a stand-alone 'special purpose entity'. The entity is a legally independent financial institution that issues its own liabilities in order to acquire the assets originated by the bank. Any credit risk associated with the assets is transferred to the special entity and to the insurance companies, pension funds and hedge funds that have financed it by buying its liabilities. However, in order for the liabilities of the special purpose entity to be sold to institutional investors such as insurance companies, pension funds and beneficial trusts or foundations, it the liabilities of the special purpose entity must carry an investment grade rating from a nationally recognized statistical rating organization.

Thus the credit rating replaces the process of credit evaluation that was formerly undertaken by bank loan officers and credit committees – the credit evaluation is thus performed by the credit rating agencies. This represents one of the basic differences in the 'originate and distribute' model of banking from Minsky's original analysis of declining margins of safety. It also means that the present crisis will be different from the traditional Minsky crisis.

Unlike J.P. Morgan, or bank loan officers, the credit rating agencies have no personal knowledge of the faith and credit of the original borrowers of the assets that provide the underlying collateral for the securitized loans. Banks had already developed credit assessment based on scoring of the attributes of the borrower, rather than personal knowledge his

character.[8] The bank assets were thus no longer represented by "trust" but a number generated by an algorithm representing the statistical probability that the borrower would have the same creditworthiness as other borrowers with the same score number.

Thus, in the absence of direct knowledge of the borrowers, rating agencies appropriated the methods used by statistical arbitragers, seeking statistical correlations between groups of assets with aggregated credit scores and the probability of repayment. However, this procedure was not applied after the securitization of the assets, it soon came to be applied in the construction of the loans to be included in the group or pool to form the collateral or corpus of assets held by the special entity. The assets were thus selected to meet a particular probability of repayment that would qualify as investment grade, not by the past history of the borrowers. This process creates a sort of pre-selection bias in which a combination of loans is chosen to produce a particular credit worthiness as measured by the probability of default. While it is a backward looking procedure, using statistical time series, it is different from the traditional Minsky process described above, for it does not incorporate the accumulation of knowledge about borrowers over time in stable conditions, it instead seeks to use the history of previous borrowers to make a forward looking prediction of the credit risk of the current group of borrowers.

**Cushions of Safety in Collateralised Subprime Mortgage Obligations**

In the case of the securitization of non-conforming mortgage loans (i.e. that loans do not qualify for a guarantee from a Government Sponsored Entity for such as Fannie Mae or Freddy Mac) usually called "subprime" and "Alt-A", loans this process is particularly hazardous

[8] Most banks use Fair Isaac Corp. generated FICO scores, originally developed for applicants for credit cards and auto loans, they had virtually no history in assessing subprime borrowers. According to HSBC Finance Director Douglas Flint (*Wall Street Journal*, February 8, 2007) "'What is now clear is the FICO scores are less effective or ineffective' when lenders are granting loans in an unusually low interest-rate environment." According to the New York Times (" The Subprime Loan Machine", by Lynnley Browing, March 23, 2007 ) these scores were then used in automated underwriting programmes, "such as those developed by Edward N. Jones, a former NASA engineer for the Apollo and Skylab missions. Through his private software company in Austin, Tex., Mr. Jones and his son, Michael, designed a program that used the Internet to screen borrowers with weak credit histories in seconds. The old way of processing mortgages involved a loan officer or broker collecting reams of income statements and ordering credit histories, typically over several weeks. But by retrieving real-time credit reports online, then using algorithms to gauge the risks of default, Mr. Jones's software allowed subprime lenders … to grow at warp speed."

as such loans have are a relatively small part of the total population of mortgages and are relatively recent. [9]There is thus no series of performance to determine the correlations between the credit scores of the borrowers and the probability of their being able to meet their cash commitments. Further, most of these loans were originated without proper documentation as to the borrower's income, wealth and employment status, thus, the very information that would have been required to make a credit assessment based on scoring was not available, and in many cases fabricated.[10]

In addition, the vast proportion of the subprime mortgages were written against adjustable interest-rate or interest rate only repayment schedules[11] which allowed for very low and in some cases zero interest payments for the first few years of the mortgage. After this period the interest rate would be reset to the prevailing market rate for adjustable rate mortgages, or would have to be completely refinanced in the case of an interest-only mortgage.

Analysis of a subprime mortgage according to Minsky's determination of the margin of safety created by the expected cash inflow relative to the cash commitment on the mortgage suggests that these mortgages had an inbuilt decline in margins of safety. On the presumption that the borrower had sufficient income to meet the reduced cash commitments for the initial period of the loan with the appropriate cushion of safety, maintaining a similar cushion after the interest rate reset date would require that market mortgage interest rates remain at or below the very low levels at which the mortgages were originally written, or for the borrower's income to increase by the amount of the increased cash commitment due to the interest rate increase, or for the price of the property underlying the mortgages to have remained stable or risen sufficiently that in the event the borrower could not meet payments the property could be sold to liquidate the outstanding balance on the mortgage. What appears in Minsky's terms to be a hedge or speculative financing scheme in the early years, resets to the equivalent of a

[9] Subprime mortgages represented an average of 8 per cent of all originations in the period 2001-2003, rising to an average of 20 per cent in 2005-6 when over 80 per cent of such mortgages were securitized with an average value of around $450b per annum.

[10] Around half of the originations in 2005 and 2006 were classified as having low or no documentation.

[11] In 2004-2006, an average of around 90 per cent of subprime mortgages where at adjustable rates, with interest only with balloon repayments reaching 40 per cent in 2005.

Ponzi financing scheme because of the likelihood that the cash commitments can only be met by increased borrowing at some future date to meet the shortfall between the higher interest costs and borrowers' incomes. While subprime mortgages may have had a positive net present value when evaluated over the first two or three years, over the life of the mortgage for any reasonable expectation of future values of interest rates, income growth and house prices, the net present value was limited to the realization value of the underlying property. These were the assets that provided the collateral for the securitized structures given investment grade sold by the special-purpose entities to final investors.

As mentioned above the liabilities issued by the special purpose entities to fund the purchase of the sub-prime mortgage collateral from the originating banks had to be investment grade to allow the major institutional investors to buy them. How was this possible when the subprime mortgages were already nonconforming, usually undocumented, and on any reasonable set of expectations of future conditions would have values far below expectation.

This was accomplished by structuring the securitization vehicle. The structure was represented by a number of different risk classes of liabilities. The senior (sometimes called super senior) class offered a guaranteed rate of return and fixed maturity. For a single mortgage such a guarantee is impossible because in the United States a mortgage can be repaid at the pleasure and economic interest of the borrower. Securitisation thus initially required statistical estimates of repayment rates, something that had been in practice since the first use of securitised mortgages (originally by Salomon Brothers' Lew Ranieri in the aftermath of the collapse of the thrifts in the 1980s). In this way it was possible to determine the characteristics of borrowers' that would be required to get a particular maturity. In the case of subprime mortgages there was also the possibility of non-performance causing the return on the vehicle to decline. This was solved by overcollateralization of the senior securities. While they represented less than 100 per cent of the value of the underlying mortgages, they had senior claim on the interest and principal payments from all the mortgages in the collateralized obligation. Thus, in the case of repayment or default on some of the underlying mortgages, the guaranteed return could still be paid. The rate of overcollateralization, determined by the

statistical probability of the rate of default on the underlying mortgages, represents what Minsky called the margin of safety – the expected income from the pool of mortgages included in the securitization was a large multiple of the interest and principal payments promised to the buyers of the senior securities. In Minsky's terms the senior class of security could be represented by a hedge profile – the expected income from the mortgage pool was far in excess of what had been pledged to the purchasers of the senior securities. As such it was rate investment grade by the credit rating agencies, despite the fact that it was backed by valueless subprime mortgages. It was the cushion of safety that made it possible to issue the senior securities as investment grade. In terms of the cash inflows and cash commitments of the collateralized mortgage obligation, there would be an excess of income relative to commitments for the life of the vehicle representing the rate of overcollateralisation.

The remaining funds required for the purchase of the underlying subprime mortgages were raised through the issue of intermediate and residual securities. The class of intermediate securities would receive the income remaining after payment of the commitments on the senior securities, and thus had a much lower margin of safety. This would show variable cash income that might occasionally fall short of the payment commitment, but on average have a positive net present value. In Minsky's terms this would represent a speculative financial profile.

Finally, a residual security was sold that would receive income only if there were no refinancing, prepayments or defaults on the underlying mortgages. In terms of payment streams there was no cash income to meet the cash outflow until the previous two superior securities had been paid. If defaults and prepayments were within the estimated statistical probabilities used to determine the overcollateralization, these securities would receive a much higher rate of return than that paid on the senior securities, but with a zero margin of safety – indeed, the residuals represented the margin of safety. Their return could be zero. These non-investment grade securities were sold to hedge funds willing to take higher risks for higher returns, or were grouped together and used as the collateral for another securitisation issuing an overcollateralised investment grade senior security, an intermediate, and a residual security.

Here, it was the estimated probability of the probability of default of the original securitization that determined the cushion of safety – safety that was more apparent than real.

Since investment grade rating was crucial to the success of these instruments financial institutions consulted with the rating agencies on the appropriate composition of the corpus collateral of the instrument as well as on the structure of the liabilities. Thus, it was again the rating agency that determined the appropriate margin of safety. And this was determined by their assessment of the statistical probability of the prepayment rate and the default rate of the underlying sub-prime mortgages. Although they initially relied on the models of the banks, they eventually developed their own techniques which were sold to originators.

As the rise in house prices that was set off after the collapse of the dot-com stock market bubble continued, and as mortgage rates continued to fall despite the eventually reversal of Fed policy that brought an increasing Fed Funds rate (mortgage rates are usually set relative to the rates on ten-year US Treasury securities that were falling over most of the period as the yield curve flirted with inversion), the positive performance of the collateralized sub-prime loans led to the expected erosion of the cushion of safety in the form of the declining overcollateralization of the senior securities. But, this had nothing to do with any increase in the assessed creditworthiness of the underlying holders of the mortgages, only with the fact that the continued expansion of the housing market more than offset any rise in default rates and that none of the adjustable rate mortgages had yet hit its reset date.

The interest of the banks in these structures was not only the origination and underwriting fees and the release of capital from moving them off their balance sheets, but also the management fees for the entities and servicing fees for the loans (the servicing fees were also often securitized). Thus, they were eager to increase the rates of origination and distribution. Banks were also buyers of mortgages originated by independent mortgage brokers and other non-bank financial intermediaries, many of which did their own securitization.

**Liquidity Risk, Interest Rate Risk, Maturity Mismatching Redux**

In order to sustain the increase in originations, another set of special entities, known as structured investment vehicles, was created to ease distribution by acting as buyers of the senior securities of the collateralized mortgage obligations. These entities financed the purchase of structured paper (securitized credit card receivables, automobile loans, and in the large majority, collateralised mortgage obligations) through the issue of short-term asset backed commercial paper and medium term investment notes and subordinated capital. The cushion of safety was again given through the overcollateralization of the commercial paper, and the residual and subordinated nature of the other liabilities.

Additional credit enhancement was usually provided in the form of a guarantee from a monoline insurer, or a credit default swap written by an insurance company or by the originating bank itself. Since the commercial paper was backed by investment grade senior securities of collateralized loan instruments, they also received investment grade. They could be used as the investments of short-term money market mutual funds offered by most financial institutions. For these structured vehicles income was determined by the difference between the short-term money market borrowing rate and the higher interest rates on the senior collateralised mortgage securities. In effect they represented borrowing short and lending long; the net interest margin business that the banks had given up to concentrate on fees and commissions had now returned, but off the bank balance sheet. Because this was spread income, the vehicles were also highly levered. The banks that originated these vehicles benefitted from the management and servicing fees as well as the spread. But in these vehicles there was not only credit risk, but also liquidity and interest rate risk. In particular, as the Fed tightened the spread narrowed, and the sporadic inversion of the yield curve created the possibility of negative spreads. What cushion of safety that existed was again given by the overcollateralization of the commercial paper, relative to the riskier investment notes. It seems clear that the credit rating agencies concentrated on the credit risk of the assets in these vehicles, rather than the liquidity and interest rate risks that they faced.

Here we can see the process of layering and ratings arbitrage at work, as the collateral assets backing the commercial paper were senior mortgage obligations whose collateral asset

backing was a pool of overvalued subprime mortgages. As house prices continued to rise and originations continued to increase the ephemeral margins of safety built into these structures were revealed and the fragility became apparent. However, the increase in fragility was not due to the process of positive credit performance taking place over time producing a decline in the margin of safety, rather it was the simple revelation of the insufficient margins of safety that had been produced by the statistical analysis of the correlations between the credit characteristics of previous borrowers and the relations to changes in financial conditions. It was the correlation between a particular composition of the pool of assets and default that produced and initially insufficient cushion of safety, rather than the behavior of the borrowers over time generating a credit history that determined the declining cushion of safety. The fragility and insufficient cushion of safety had always been present, and it was revealed as the crisis evolved, rather than the decline in the cushion creating the fragility in which crisis became more and more probable due to the inability to meet unexpected events.

**Revealing the Inbuilt Insufficiency of Cushions of Safety**

Once the first adjustable mortgages hit their reset dates and were followed by increasing rates of default and foreclosure, the deceleration in the rate of increase in housing prices became a decline. Market mortgage interest rates had not declined to the levels of the introductory rates on adjustable mortgages and could not be met. Banks such as Citibank that had written liquidity puts for the securitized mortgage instruments found that buyers were returning the securitized mortgages to the bank. This, in addition to the mortgages held in warehouse awaiting securitizations that could not be completed added roughly half of the $55billion that Citigroup reported in the third quarter as their exposure to subprime borrowers. As the defaults quickly outpaced the overcollateralization, many investors in investment grade senior securities found that they were not being paid their guaranteed returns. Senior securities quickly transformed into their underlying collateral – valueless subprime loans.

Finally the credit rating agencies, noting that their evaluation models of the risks of default on securitized mortgages had proven to be incorrect revalued and downgraded the ratings on an ever-increasing number of structures backed by subprime loans, thus confirming

that their original estimated had been incorrect, and that the margins of safety had been misrepresented. Institutional investors who are restricted to investment grade could no longer hold these assets and had to sell them. Monoline insurers and other writers of credit default insurance, as well as creditors, sought underlying collateral which also increased the sales of subprime mortgages. Thus, the debt deflation process started for the sub-prime mortgage market, and the structured investment vehicles found that they could no longer sell commercial paper and called on bank support lines of credit and returned collateralised assets to the bank originators to avoid default.

Assets that the banks had sought to move off balance sheet through securitisation thus came back as the banks were called upon to provide liquidity to the off balance sheet structures that they had created. Although no bank has seen its capital adequacy fall below Basle standards, many have found it difficult to increase lending within their desired capital ratios to support these entities. And although losses that have been taken so far are within the limits of bank income, the full extent of the debt deflation has yet to be seen. Many banks act as prime brokers to highly leveraged hedge funds that hold the certainly valueless residual securities from collateralized subprime entities. Many banks have also written credit default swaps with the affiliates that they will have to honour, taking the devalued subprime loans back onto their balance sheets at full initial value. Many insurance companies have done the same, while many monoline guarantee institutions may also have to meet substantial claims as house prices continue to decline, and default rates continue to rise, causing the collateralized vehicles to converge to the value of the underlying collateral – which in some cases may be close to zero.

**Is this a Debt Deflation?**

What are the implications for the US economy? Estimates of the total losses on outstanding mortgages have risen sharply since the summer when Federal Reserve Chairman Ben Bernanke estimated subprime-related losses in the $50-$100 billion range. Subprime accounts for more than half of expected credit losses and are now forecast in the $300-$400 billion range. Since 2005, when the majority of adjustable rate mortgages have been written, roughly $1½ trillion subprime and $1 trillion alt-A mortgages have been originated. If house

prices were to fall by 30 percent this would give a write down of approximately twice this figure, not taking into account additional defaults. In addition, there has been an unexpected increase in prime mortgage defaults that would only add to this estimate. This would give a number closer to the top estimates of $900 billion. The losses will be distributed across borrowers, creditors and the banks. For the non-bank holders there will be a wealth loss, with a difficult to calculate impact on activity. More importantly is the impact on short-term money markets and consumer lending, both of which have more or less stopped functioning because of the uncertainty of the credit worthiness of financial institutions that has been caused by the layering and insufficient cushions of safety.

If banks attempt to recoup their losses by restricting lending and rebuilding capital ratios, every $1 loss would require a reduction in lending of around $8-$10 for a bank that is considered well capitalized. It is likely that the resistant US consumer, who had financed most of its spending on the back of bank lending against housing collateral created by rising house prices may finally also start to retrench. Thus, the economy will be caught between the Sylla of falling consumer spending and the Charybdis of increasingly restrictive credit conditions. The increase in exports due to the declining dollar would not be of sufficient magnitude to provide an offset that prevents recession.

**Conclusions**

The conclusion is that although the commentators were right to draw attention to the fact that the current crisis has all the attributes of a Ponzi financing scheme that risks turning into a full scale debt deflation, but it is clearly not the result of a traditional endogenous Minsky process in which declining cushions of safety lead to fragility. In the current crisis the cushions of stability were insufficient from the beginning – they are a structural result of the way credit worthiness is assess in the new “originate and distribute” financial system that was sanctioned by the modernization of financial services. The crisis has simply revealed the systematic inadequacy of the evaluation of credit, or what is the same thing, the undervaluation and mispricing of risk. This is basically due to the fact that those who bear risk are no longer responsible for evaluating the credit worthiness of borrowers. In the traditional Minsky process,

bank profitability depended on their ability to evaluate the credit of borrowers and their ability to hedge the risk of borrowing short and lending long. The profits of the credit rating agencies are independent of their ability to correctly evaluate risk and it has been suggested that their profits are correlated with the overestimation of credit worthiness and the undervaluation of risk. This is a crucial failing in a modern system that is supposed to excel in the pricing of risk and the distribution of risk to those who can best bear it. But, if there is no efficient means of evaluating risk, it cannot be efficiently distributed.

This has two related consequences. The first is that the attempt to provide increased transparency for the balance sheets of financial institutions in order to provide a more efficient evaluation of risk by requiring marking the value of assets to market may be counterproductive when there is no market for the assets held by financial institutions. This is precisely where the credit agencies failed to provide correct evaluations. If the prices are determined by the risks as assessed by models of statistical correlation, then the values are no better than the models that produce them. That is, no better than the presumption that the future will replicate the past, which we know not to be true except in periods of stability. Indeed, this is one of the reasons why the current crisis started with an inbuilt deficiency of safety, for the calculation of the required cushion based on a past history of stable results makes the decline in safety instantaneous, already embodied in current assessments. The introduction of the FASB 157 and 159 accounting regulation for these types of level 3 assets was intended to ameliorate this problem, but it now appears to provide additional imprecision in the methods used to value risk.

It is telling that while the present crisis is often presented as a “repricing of risk”, the proposals to meet the crisis, such as the superfund to purchase and provide a safe haven for the assets of structures investment vehicles will tend to reproduce the existing systemic causes of the mispricing since it does not appear to provide a transparent method of determining the prices of the assets it is to acquire. Indeed, it can only be justified on the presumption that the current prices are undervalued and the market will eventually return to a state in which it provides correct evaluations. But, if the market is not capable of such valuation in the case of

these structured assets, the marking to market is not the best method of judging the solvency of an institution that used them. The alternative, in which the originating banks take the assets back onto their balance sheets has the same result, of confirming that there is no effective pricing mechanism for collateralized obligations.

The second is the ironic fact that in November the various financial regulatory and supervisory agencies in the United States finally agreed on the method of implementation of the Basle II Risk Based Capital Framework in which credit rating agencies are given a major role in evaluating the credit risks of banks assets. Instead of improving risk management, the present crisis suggests that it may provide an inbuilt bias in favour of underestimation of risk and thus under capitalization of banks, producing a more fragile financial environment.

The crisis also raises the question of the US regulatory structure. While the Fed is charged with regulation of bank and financial holding companies, most of the difficulties have been involved with holding company created special entities that issue securities and are thus subject to securities market regulations. These units bear a close resemblance to the bank affiliates that were the source of fraud and malfeasance in the 1920s and which the New Deal regulations were designed to eliminate. Just as in the aftermath of the Enron crisis, caused by similar abuses of off balance sheet "unaffiliated" affiliates, bank regulations will eventually have to find a way to bring them within the effective control of financial supervisors.

The crisis not only suggests lacuna in the regulatory and supervisory system currently in place, it also raises questions about the ability of the Federal Reserve to ensure stability – to act as Minsky suggested it should, by supporting asset prices. Martin Mayer's book on the Fed already raised the difficulty of controlling bank lending through actions that influenced bank balance sheets when banks no longer hold loans on their balance sheets. In the "originate and distribute" system the amount of lending was determined by the ability to distribute, i.e. by the appetite of capital markets for securitised loans. The only method of control available to the Fed was thus influencing capital market interest rate expectations. Chairman Greenspan proved an adept and fortunate practitioner of this art, more an art than a science. But there was one

exception. He admits[12] that the Fed is powerless to reign in expectations that lead to asset bubbles. However, he suggests that this does not represent a crucial defect of policy because the Fed always had the possibility to deal with a bubble's collapse – presumably due to the experience of 1987, 1989 and 2000. However, these were equity market bubbles, cured with a quick injection of liquidity to ensure solvency of institutions and stabilize market-traded equity prices. The present crisis presents much greater difficulties, as banks express extreme liquidity preference and attempt to offset real losses by rebuilding capital. The discount window cannot provide funds to rebuild bank capital.

From this perspective, the current crisis has little to do with the mortgage market, or subprime mortgages *per se*, but rather with the basic structure of the financial system that produces overestimates of creditworthiness and underpricing of risk. The bottom line is that the system has been structured to make credit too cheap, leading to excessive risk in order to provide higher returns. There is nothing that can be done to eliminate the inevitability of financial fragility that was identified in Minsky's work; it can only be damped by systemic policies that Minsky identified in Big Government – a government expenditure or employment plan to support incomes and employment and a Big Bank – a Central Bank willing to support asset prices through the discount window. However, it is possible to eliminate fragility that emerges from the structure and regulation of the financial system. This is the task that confronts the US financial system.

[12] Most recently in his autobiography he suggests that his attempts to use interest rates to halt expectational bubbles only aggravated them. See *The Age of Turbulence: Adventures in a New World*, New York: Penguin, 2007.