

Rise and Fall of Securitised Structured Finance

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This article traces the development of the credit “storm” currently faced by western financial markets and suggests reforms that will help strengthen systems.

The current credit storm in western financial markets threatens to bring down the entire edifice of structured finance that has, in recent times, become the high priest of the Anglo-Saxon financial system. Arising in the residential mortgage segment, the storm has rapidly spread to the wider financial system, blowing away many flourishing financial instruments such as collateralised debt obligations (CDOs), collateralised bond obligations (CBOs), leveraged buy-outs (LBOs), structured investment vehicles (SIVs), asset-backed commercial papers (ABCPs) and junk bonds. It has brought disrepute to established financial institutions (FIs) such as commercial banks, credit rating agencies, central banks and threatens to be the biggest financial crisis since the Great Crash of 1929. It is fuelling fears of a deep and sustained global recession; pressuring the US Fed into serially lowering benchmark short-term rates even as inflationary expectations abound; having a knockdown effect on all forms of consumer debt such as prime mortgages, credit card, auto, as well as commercial property, municipal and corporate loans; spelling the nemesis of high profile FIs and chief executive officers (CEOs); and inducing governments to throw fiscal prudence and moral hazards to the winds to bail out FIs that could well lead to increasing the public stake in the financial sector in the very heartland of global capitalism. In response, the US treasury has already released an optimal model/blueprint for stronger regulatory reform of the US financial system comprising separate market stability, prudential and business conduct regulators to replace the current system of functional regulation, which maintains separate regulatory agencies across segregated functional lines of banking, insurance, securities and futures, that is largely

incompatible with today’s integrated financial markets.

Driven by complex mathematical engineering, securitised structured finance is a modern financial marvel that has deepened capital markets through greater dispersal of risk, contributed to higher growth by intermediating access to large amounts of low cost funds generated by global imbalances, and made development more inclusive by giving previously excluded groups access to assets like residential property. It has also spawned a new breed of highly paid smart graduates well versed in mathematics and calculus but alas, quite divorced from the real world of old-fashioned finance with its putative sixth sense of sniffing out risk through a deep appreciation of human psychology, market sentiment and moral hazards.

The gravity of the financial crisis can be gauged from the plummeting values of key financial indices in end-March 2008 that are a measure of the current repricing of risk and credit freeze in western markets. The “Ted” spread between yields in three months’ US treasuries and London Interbank Offered Rate stood at about 200 basis points (bp), almost eight to 10 times higher than normal. The five-year credit default swap (CDX) index for investment grade corporate bonds, a good measure of corporate borrowing cost, stood at 265 bp above US treasuries, making it cheaper by 125 bp to insure emerging market debt, which is quite unprecedented. The cost of insuring bank debt is even higher. US ABCP has fallen off sharply by 33 per cent from its peak of \$ 1.2 trillion in mid-2007. New structured finance deals declined by 89 per cent, leveraged loans for buy-outs by 84 per cent, global debt issuance by 48 per cent, and global merger and acquisition volumes by 40 per cent, compared to the first quarter of 2007.

Sub-Prime Crisis

The sub-prime financial crisis has its roots in old-fashioned housing mortgage loans extended to borrowers with doubtful income and credit histories at a time when interest rates were low and housing prices were in the midst of an unprecedented

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boom. Conventional banking would ordinarily have shunned extending such loans on the basis of existing levels of borrower income. These loans were predicated on wealth – “housing equity” – gains that would accrue to borrowers in a rapidly rising real estate market. The Shiller US real home value index that fluctuated within a relatively narrow range of 90-120 over the last century from 1890 (=100) to 2000, except during the Great Depression, rose sharply over the last four to five years to touch 200 in 2006. Since it would take a couple of years for these wealth gains to accrue, upfront costs were kept minimal, with interest rates resetting at higher rates several months later through adjustable rate mortgages (ARMs) such as 2/28 and

analogous to that faced by Harry Potter in J K Rowling’s bestseller, *Harry Potter and the Deathly Hallows* in trying to locate and destroy the soul of the evil Lord Voldemort that had been split into many parts and hidden and dispersed across the world.

Hedge funds and private equities invested huge amounts in CDOs, CBOs and other derivatives. Hedge funds alone managed almost \$ 2 trillion of client money. However, on account of the triple-A ratings, even pension funds, recognised FIs and high net individuals bought these instruments. The risk consequently spread to portfolios and agents not directly involved in the sub-prime and even housing business. Structured products originated mostly in the US but European banks

portfolio to \$ 22.7 billion on a thin equity base of \$ 940 million, while Peloton Partners, another ill-fated fund, used borrowings to boost its portfolio four to five times. Investment banks were no better, with both Goldman Sachs and Merrill Lynch using \$ 30-40 billion of equity to leverage over \$ 1 trillion of debt.

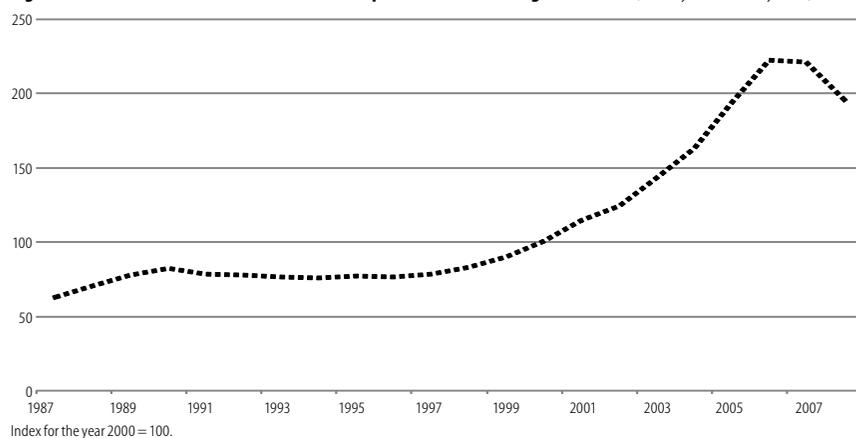
The concept of fractional banking and minimum capital to lending ratios had evolved to keep such excessive Ponzi-like leveraging in check. The “originate and distribute” model of structured finance, through which the original lender offloaded his loan from his balance sheet, however permitted banks to far exceed these prudent limits because financial structures such as sivs were off-balance sheet and unregulated.

The real heart of the siv crisis was hyper leverage and not the real estate meltdown leading to mortgage defaults. The totality of sub-prime loans is of the order of \$ 2 trillion and a worst-case scenario is losses of \$ 400 billion on this account, which is an amount that the market can digest and move on. The real reason for the panic and foreboding in the market is because the hyper-leveraged outstandings of all credit derivatives has grown to around \$ 50 trillion today based on a 100: 1 leverage in the typical instance to create new capital. The structure of fractional banking was replicated in the investment banking segment both in maturity mismatches and recycling of loans and investments several times over, without attendant regulatory and prudential norms in place.

Leveraged Buy-Outs

While the rout in sub-prime residential mortgage loans through a collapse in the market price of its CDOs and sivs following the double whammy of rising interest rates and falling housing prices (that dried up home equity necessary for refinancing high priced adjustable mortgages) has been extensively discussed and debated upon, another similarly structured vehicle, viz, LBOs, have been largely denied their fair share of discussion and attention. An LBO is a process wherein prospective shareholders seek quick returns from an otherwise undervalued company. As in the case of structured housing finance, the

Figure 1: Real Estate Boom: S&P/Case-Shiller Composite US Real Housing Prices Index (January 1987-January 2008)



“interest only” loans. There was also some laxity in credit appraisal, since financial innovation ensured that the repayment risk would not remain with the original lender anyway. These sub-prime loans were bundled and repackaged with prime quality loans into a mix of highly rated “senior” and lower rated CDOs through leveraged sivs. Credit rating agencies were frequently closely involved in the structuring of highly rated CDOs that included sub-prime loans. Even though total sub-prime housing loans are estimated at less than a sixth of the realty mortgage business of \$ 14-15 trillion, complex structuring of CDO instruments meant that prime and sub-prime tranches interpenetrated each other and with instruments widely traded across borders information asymmetries made it virtually impossible to pinpoint where the default risks lay. This situation is quite

also took large exposures through secondary trading. Due to this wide dispersal of risk when a crisis of confidence surfaced, a relatively modest increase in seriously delinquent sub-prime mortgages disrupted the multi-trillion global financial systems as credit markets went into a virtual freeze.

To keep costs low, hedge funds and private equities that invested heavily in sivs borrowed at low rates from the short-term commercial paper market. Short-term commercial paper was floated and frequently underwritten by banks and brokers that sold the original housing mortgages. Since the spread between borrowing cost and the returns of triple-A rated CDOs paper was thin, hedge funds multiplied their investment several times leading to runaway leveraging in the financial system. The ill-fated Carylye (hedge) Fund, for instance, swelled its

acquiring company (mostly financed by private equity funds) places significant layers of senior and mezzanine debt over a relatively thin layer of equity. The purpose of an LBO is to benefit from improved valuation of a currently undervalued company as a result of the transformation flanked by turnaround measures and redeployment of assets.

As in the case of sub-prime loans, the availability of cheap financing widely attributed to the excessive liquidity arising from the so-called “Greenspan Put”, was an essential ingredient of the LBO bubble. The Federal Reserve reduced interest rates to historic lows to revive a sagging economy reeling under losses from the “dotcom” bubble burst. This one move opened the floodgates for easy availability of “cheap financing” for the housing mortgage business and for private equity firms (PEFs) who flourished in the business of buying-out undervalued corporations. These PEFs typically raised a maximum of 25 per cent of the total purchase price as equity contribution and borrowed the balance through a combination of senior and mezzanine debt from commercial banks and through issue of high-yield “junk bonds” in the market. The entire debt was taken on the acquiring company’s books by leveraging its balance sheet.

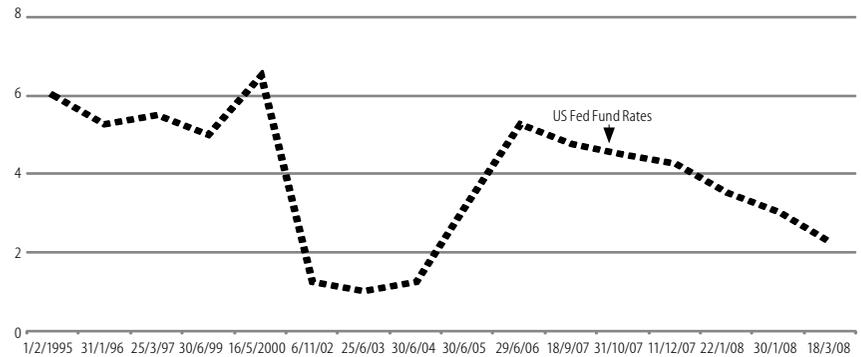
While PEFs and hedge funds typically got high returns on housing mortgages by arbitraging high-yielding loans with low cost short-term debt, they earned premium returns in two distinct forms through the LBO route: dividends and management fees that enabled them to recover most of their equity investment within the short span of one year; and huge capital gains when they sold the company after four to five years, usually exiting at internal rates of return greater than 25 per cent.

The signs of the ensuing burst of the LBO bubble could have been foreseen in the excesses of both borrowers and lenders in the financial markets. Just as lenders in the housing mortgage business went berserk doling out adjustable 2/28 mortgages at “teaser rates” to no income, no job or assets borrowers on the back of steeply rising housing prices that made it easier to subsequently refinance the original loan through home equity-based second or even third and fourth mortgages, PEFs

went overboard buying out companies at astronomical prices, way above any rational justification since credit was cheap, stock markets were rising and commodity prices were booming. Whereas companies were purchased at just four times their earnings before interest, taxes,

like banks, pension funds and insurance companies. However, as in the case of sub-prime mortgages and CDOs, when these junk bonds were bundled and repackaged into senior CDO or collateralised loan obligations (CLOs) tranches supplemented with investment grade ratings, the

Figure 2: Greenspan ‘Put’ (in %)



depreciation and amortisation in 2002, the multiple touched 15 by 2007. Bankers and hedge funds made credit readily available to PEFs, diluting traditional checks and balances like minimum desirable cushion of cash flow to fund interest outgoes. They even extended loans for funding interest payments of the acquiring company.

Banks funded LBOs through a combination of revolvers, term loans and/or bridge loans (temporary equity). Like short-term ABCP used to purchase housing mortgage bonds, bridge loans were for short-term financing and meant to be repaid as soon as the PEFs could market high-yield corporate papers. Lending banks also extensively moved these “bridges” to their CDO conduits for “onward distribution” to investors in various tranches. As the credit crisis deepened, PEFs realised that potential investors to subscribe to its corporate papers had vanished, thus forestalling the repayment of “bridge loans” to banks. On the other hand, banks were unable to offload these loans from their balance sheet. These bridge loans are much more risky than leveraged loans as banks seek no collaterals.

Junk Bonds

Junk bonds are speculative grade, high-risk-high-return bonds, mostly rated “c” or below by rating agencies and therefore, cannot be subscribed by certain entities

resultant financial alchemy made them eligible for investment by these entities. The risk premium (the spread between high-yield debt and us 10-year treasury bills) on junk bonds narrowed considerably to 260 bp, ushering an era of cheap and easy money chasing aggressive PEFs. Funds borrowed heavily to purchase risky high-yielding bonds of over-leveraged companies. Banks also recklessly invested in CDOs/CLOs with high-yield junk bonds “as underlying” in the wake of low returns from sovereign bonds. In such bonds, termed as CDOs, the asset manager invested in high-yield securities on behalf of the income holder/asset originator. The asset manager borrowed from FIS against the portfolio of high-yield securities. FIS lent several times the worth of the securities (depending upon the credit quality of the underlying portfolio). The asset manager used these borrowed funds to purchase even more high-yield securities. These securities were transferred to special purpose vehicles (SPVs) that securitised the portfolio by splitting them into various tranches and distributing them to end-investors just as in the case of CDOs. Interest and principal on the new securities, which was to be paid by the SPV, was financed from cash flows received from the portfolio of bonds bought by the SPV. The money paid by the SPV for the securities was used to repay the bank/FIS loan. The booming “carry trade” through which

investors borrowed short-term in low interest currencies like the Japanese yen to invest in higher yielding products in other currencies provided additional ballast to the CDO, CBO/CLO and LBO bubbles.

Junk bonds were also one of the main instruments used to fund the LBO boom way back in the 1980s. In 1989, the proposed buyout of UAL Corporation (parent of United Airlines) for \$ 6.75 billion fell through as the buyout firm could not secure the required funds. This marked the end of the LBO boom along with the collapse of the junk-bond market before its re-emergence in early 2000. The tremor of the failed UAL LBO reverberated on the Dow Jones industrial average that fell by more than 6 per cent in response. The failure of several LBO deals in the late 1990s underscored the growing investor repulsion for sub-standard investment products like junk and speculative bonds. A parallel scenario seems to be playing out currently, beginning with the turbulence in the sub-prime mortgage markets. Even though the LBO and sub-prime residential loan markets are apparently unrelated, systemic risk plays out more strongly in the banking and financial sectors than in any other industry. The collapse of hedge funds with significant exposure to housing mortgage-based CDOs, massive hits to bottom lines of leading banking giants, rising defaults on home loans, severe liquidity squeeze across financial markets, and events like the run on Northern Rock (the fifth largest lender in the UK) and the collapse of Bear Stearns underscored their exposure to high-end financially engineered products, which bank managers frequently admitted to not understanding themselves. FIS were taking risks and passing on little understood hybrid instruments to entities that could not understand them.

The one element that tied the sub-prime residential and LBO markets was the suspect credit quality of the main underlying product: a home loan in the case of the former and corporate loan/junk bond investment in the case of the latter. While an LBO is theoretically aimed at transforming an undervalued company through infusion of debt/capital, in retrospect it is clear that there was under pricing of risk as a result of which and PEFS ended up

purchasing companies at inflated prices. A commercial bank with strong risk management systems would normally have shunned both these category of borrowers. This was overlooked in a booming market, as the strategy yielded good dividends during an era of high liquidity and cheap money that prevailed till early 2007, especially since the loan originator could pass on the credit risk.

Onset of Crisis

Two events that were assumed to have a low probability of simultaneous occurrence in a booming market subsequently occurred: first, interest rates increased and second, home prices began falling, wiping out home equity. After declining from a high of 6.5 per cent in May 2000 to 1 per cent in June 2003, the US Fed Funds rate rose steadily to peak at 5.25 per cent in June 2006. This led to sub-prime mortgages resetting at shockingly high rates, with homeowners missing payments and foreclosing accounts contributing to falling real estate prices. As a result, banks, other FIS, hedge funds and private equities holding the mortgage-backed securities incurred valuation losses and there was pressure to sell assets at a time when there were few buyers in the market to meet margin – “haircut” – calls. Hedge funds like Carlyle Capital and Peloton Partners collapsed because of their inability to meet margin calls, leaving the funds’ lenders, mostly investment banks and brokers, eventually taking the problematic securities on their balance books.

What caused the tables to turn in the LBO domain was the correction in credit spreads and repricing of risk. Risk premiums (credit spreads) have considerably widened over the past six months from the lows already discussed. Potential investors have started demanding much higher yields or returns as the risk price for investing in bonds and commercial paper of over-leveraged companies. This has resulted in a substantial increase in interest-burden which, in the event of a recession, could well pre-empt much of the free cash flows of the companies bought out. Such companies will have to display a really strong operating performance to emerge out of the debt burden that would be very challenging in a recessionary environment.

As things stand, corporate profits, though declining, are still healthy and default rates remain relatively low. LBO debt defaults however, as in the case of CDOs with sub-prime housing mortgage exposure, are expected to rise. Since buying bond repayment insurance was commonly used to enhance credit rating of securitised debt, this is already having a knockdown effect on another thriving and unregulated multi-trillion business, namely the highly under-capitalised credit default swap (CDS) market for insuring corporate bonds. CDS are the most widely traded derivatives with outstanding CDS trades estimated at \$ 45 trillion, which exceeds the US government bond, stock and housing markets combined, and almost four times US GDP. CDS spreads are rising and were they to increase above a certain threshold (generally around 200 bp above applicable treasuries for highly rated bonds) there are often covenants mandating unwinding of the underlying complex-structured vehicles which could really trigger financial Armageddon. This “shadow banking” poses a relatively unheralded systemic risk as even relatively modest defaults could pressure this market since it is typically highly leveraged, with CDS (protection) sellers insuring up to 150 times their capital base.

Monoline insurance companies like AMBAC and MBIA, important links in the CDS chain, offered bond repayment insurance. These companies traditionally churned huge profits by insuring safe municipal bonds, wherein the bonds that they insured took on the rating of the insurer. Monolines foresaw huge business potential in insuring bonds and securities issued by investment banks. Soon they were insuring the default risk of mortgage-backed security and CDOs only to realise, in the wake of sub-prime write-downs, that they had insured risk where the actual payouts would be much greater than their reserves and capital. The total debt insured by monolines is estimated at \$ 2.4 trillion. AMBAC and MBIA have reported record losses during 2007 and are facing rating downgrades from the current AAA ratings. The consequence of a rating downgrade would be a requirement of additional capital by the banking system as the risk weighted capital requirement is in

proportion to the external ratings assigned by credit rating agencies – better the credit rating, lower is the corresponding risk weights allocated for capital adequacy.

The market for speculative bonds, which had re-emerged as a preferred vehicle for financing LBOs is now facing investor repugnance as they reassess and reprice risk. The spread between high yield bonds in the US and 10-year treasury yields captured in the CDX North America high yield index stood at above 700 bp on March 20, 2008. The ITRAXX European crossover index rose from under 200 bp in May 2007 to over 600 bp in March 2008. The leverage that once generated huge gains for PEFs has become a millstone around their necks threatening gravitational collapse. The market for LBO debt seems to have fallen through again. Banks and brokers in the US are currently sitting on a huge pipeline “hung” LBO loans worth about \$ 200 billion with no potential takers in sight. Citigroup has the biggest exposure of \$ 43 billion, followed by J P Morgan Chase, Goldman Sachs (\$ 26 billion each), Lehman Brothers, Morgan Stanley (about \$ 23 billion each), Merrill Lynch (\$ 19 billion) and Bank of America (\$ 12 billion). These are the same FIs that have the largest housing mortgage and sub-prime exposures.

Structured Investment Vehicles

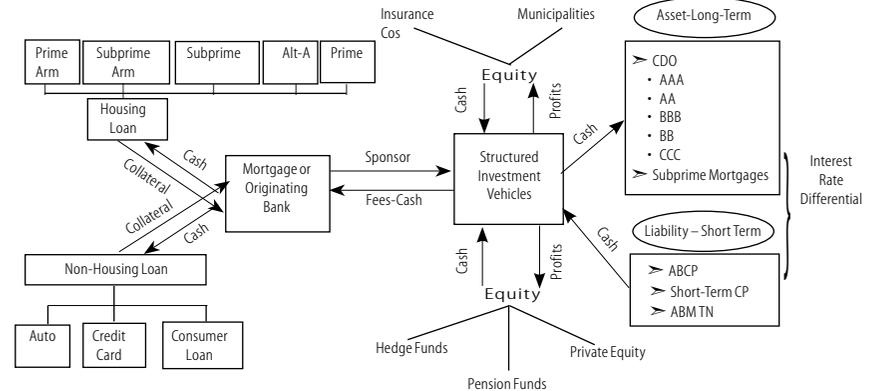
SIVs were critical links in both the sub-prime housing mortgage and LBO funding chains. These were the vehicles through which commercial banks took loans extended by them for mortgages and LBOs, as the case may be, and bundled and repackaged them off their balance sheets through instruments such as CDOs and CBOs. SIVs were typically funded through low cost short-term senior debt instruments such as ABCP and asset backed medium-term notes (ABMTN). Like home finance companies, they usually run huge asset-liability mismatches. The lifeline of an SIV lies in its ability to successfully refinance continuously maturing short-term obligations through the issue of fresh ABCP and/or ABMTN. The market for ABCP and ABMTN has vanished due to the downturn in the credit cycle with the result that SIV assets are being liquidated

at a discount to pay for maturing debt. Under extant regulatory norms asset values need to be “marked to market” at regular intervals. Since the market values of these assets have fallen steeply, even as defaults have been relatively modest, it is entirely possible that the sub-prime crisis crash may well be the first major financial crisis where there are few actual defaults.

Most SIVs are sponsored by commercial banks who also manage them in return for a fee and are held as “off-balance sheet” conduits of the latter. The parents are now pumping in funds to revive the almost sinking SIV industry, which currently carries a baggage of assets worth around \$ 300 billion. If the parent bank does not step in – they are not always legally

Of this, about \$ 85 billion is still to be reported. While sub-prime loans were mostly an American phenomenon, London bankers had become particularly adept at repackaging these assets. Consequently, it is widely felt that the losses are likely to be shared equally between the US and Europe. The contagion, which has seen even top rated financial assets outside the housing sector lose market value has led to major FIs taking huge hits on their bottom lines, mainly through huge mark-to-market losses. UBS has reported the biggest loss by far of over \$ 40 billion, with Merrill Lynch and Citigroup following with more than \$ 20 billion each. HSBC, Morgan Stanley, Bank of America, KfW Deutsche, Washington Mutual, AIG,

Figure 3: Structured Finance – Cash Flows



obligated to – then it risks a fire sale of assets and collapse of the SIV, consequently damaging its reputation. Once the “toxic assets” are taken on their balance sheets, banks are required to mark them to market. Since the market for these derivatives has evaporated, this presents a practical difficulty. Banks have, therefore, been constrained to use the very thinly traded ABX, which shows steep falls in valuations, as a result of which they have had to take huge hits on their balance sheets. Launched in January 2007, the ABX serves as a market benchmark for securities backed by home loans issued to borrowers with weak credit.

Fear of Contagion

According to Standard and Poor’s, sub-prime losses are currently estimated at around \$ 285 billion, mostly in the form of asset value write-downs occasioned by mandatory mark-to-market fair valuations.

Credit Agricole, Credit Suisse, and Wachovia have reported losses of between \$ 5 and \$ 10 billion each. Citicorp, Societe Generale, J P Morgan Chase, Muzho Financial, Barclays, Royal Bank of Scotland, Dresdner, Bayerische Landesbank, Freddie Mae and Freddie Mac are amongst other major banks that have reported substantial losses. In addition, Northern Rock and Bear Stearns have had to be bailed out. Fresh losses are being reported practically every day and eventual losses are expected to be much higher, with the most pessimistic speculations approaching \$ 1 trillion. While it is unclear where the balance losses lie, it is widely believed that substantial losses have gone unreported in the absence of credible mark-to-market valuations in a highly illiquid market and that the procession of write-downs is likely to continue for some time. It is such notional “mark-to-market” earnings that led Warren Buffet to view derivatives

as potential time bombs way back in the Berkshire Hathaway annual report for 2002.

Since these write-downs are not actual credit losses, it is quite possible that they could be written back once the crisis is past and liquidity returns or if these securities are held till maturity since actual defaults are limited. The immediate impact of these write-downs, however, is massive deleveraging in the financial system through the “financial accelerator”. Jan Hatzius, chief economist at Goldman Sachs, has estimated that a \$ 200 billion sub-prime loss could cut banking capital by 12 per cent. Under the fractional system of banking governed by the Basel regulatory norms, banks are expected to maintain a minimum capital adequacy ratio. If banks shrank their balance sheets by 12 per cent, the implied reduction in overall lending would total \$ 2.3 trillion. This deleveraging is presently limited to the financial sector, which was mostly afflicted by this hyper-leveraging anyway but the epic scale of the deleveraging could well lead to a major spillover into the real economy, which has been relatively little affected by the credit storm so far. Indeed, corporate borrowing costs are now on par with those of crisis-ridden banks. However, since much of the final consumer demand in the us, which accounts for a quarter of global GDP, arose out of leveraging wealth gains from assets in a booming market, rather than from current incomes as such, it is widely feared that sustained deleveraging could lead to a deep and protracted global recession. Nouriel Roubini of New York University has estimated that a 10 per cent fall in house prices has already knocked the equivalent of 14 per cent of US GDP from household wealth and that a further price drop of 20 per cent could be expected in the near future. The us Treasury Secretary has estimated a drop of about 25 per cent over 2007 and 2008.

Forced to write down investments and to take exposures back on to their balance sheets, several major international banks now find themselves short of capital, as a result of which there is a virtual credit freeze in Organisation for Economic Cooperation and Development interbank markets, as banks are unwilling to even

lend to each other. The us Fed, Bank of England and the European Central Bank have tried to pump in liquidity by lowering benchmark short-term rates and providing unlimited liquidity on demand, which has eased the freeze slightly. PEFS, and especially sovereign wealth funds (swfs) from developing countries, flush with accumulated current account and commodity boom surpluses, have stepped in to inject badly needed capital into troubled banks. This is, indeed, ironic because it was the global savings glut arising from these surpluses that fuelled the excess liquidity and low interest rates underlying the sub-prime crisis in the first place. swfs, floated by oil-rich west Asia nations, Singapore, China, Russia, Norway, Australia and South Korea, to name a few, are mostly long-term players with deep financial pockets and usually do not seek quick returns. GIC and Temasek of Singapore, China Investment Corporation and Citic Securities of China, Abu Dhabi Investment Authority of Abu Dhabi and Kuwait Investment Authority have invested almost \$ 50 billion to provide liquidity and recapitalise major international banks like UBS, Citigroup, Merrill Lynch, Morgan Stanley and Bear Stearns.

The efforts of PEFS and swfs, which manage resources of about \$ 700 billion and upwards of \$ 3.3 trillion respectively have had to be topped up by central banks and governments, especially the us Federal Reserve, in a desperate bid to revive credit markets and limit contagion. The us Fed has lowered short-term interest rates by an unprecedented 300 bp over a six-month period beginning September 2007 to inject liquidity. Governments and central banks have also rushed directly to the rescue of troubled banks such as Northern Rock, Bear Stearns and IKB because the collapse of major FIS could generate ripple effects amongst counterparties and consequently, a cascading effect on security prices. More banks would have struggled to raise short-term finance and possibly collapsed had not the us Fed provided a \$ 436 billion liquidity support package to banks to bail out their svcs, including hedge funds, against illiquid collaterals of doubtful credit quality in the belief that the underlying instruments are actually sound

credit. There are also proposals in the us government to facilitate refinancing of high interest “teaser” loans through loan guarantees of \$ 300 billion to forestall foreclosures of mortgages, in a bid to save the gains of the inclusive credit revolution, which enabled previously excluded groups to own houses and also to cut banking losses. Meanwhile, Fannie Mae and Freddie Mac, the distressed government chartered mortgage financiers, have been permitted by their regulator, the Office of Federal Housing Enterprises Oversight to reduce their surplus regulatory capital requirements from 30 to 20 per cent. This would pump an additional \$ 200, billion of liquidity and give them greater flexibility to refinance distressed “jumbo” mortgages. According to the us Census Bureau, home ownership rose to 69.3 per cent by 2004, an increase of 5.4 per cent over 1991. Foreclosures are currently expected to reach 1.5 to 2 million that, on a total home base of 80 million, could reverse half to one-third of these inclusive gains.

The jury is still out on whether these bail-outs, which have been widely criticised for their moral hazard in encouraging future risky behaviour, would stabilise financial markets and pre-empt major damage to the real economy. However, both the us Fed and government obviously believe that nothing short of assurances of sovereign guarantees and major regulatory reform is likely to revive the trust between FIS that forms the basis of the financial system.

Concluding Remarks

In *A Short History of Financial Euphoria*, John Kenneth Galbraith advanced the rather depressing theory that finance did not lend itself easily to innovation, since at the end of the day, all credit is secured on some asset no matter how much it is repackaged and sliced horizontally or vertically. Is the collapse of the market in complex-structured products merely another manifestation of Galbraith’s dictum, especially since investors are currently eschewing complex-structured financial products in what is termed as a “flight to simplicity”? It is undoubtedly true that excessive liquidity that went beyond what would be expected based upon existing assets was a necessary

condition underlying the sub-prime crisis. This “artificial” increase in “money supply” was not created through regular money creating banking channels but through financial innovation that mimicked fractional banking. “Enhanced” liquidity indeed led to more rapid growth rates and financial inclusion but also exposed the system to new risks for which it was quite unprepared. The question uppermost in most people’s minds is how the long-term gains of this “inclusive credit revolution” can be sustained and structured finance not priced or regulated out of the market. Consequential regulatory oversight and reform currently being debated in the us treasury and the financial press need to be highly nuanced.

First and foremost, it is widely felt that the Basel capital adequacy norms need to be strengthened to address escalating off-balance sheet exposures. The new Basel II framework has provisioned to bring off-balance sheet exposures to sivs within the net of capital provisions. Further, commercial banks will be pressured for additional mobilisation of total risk-based capital as it moves from prime to sub-prime mortgage lending or from traditional corporate to leveraged lending. This movement from low-end to high-end of the risk spectrum earlier required the same capital charge under the “single-brush” approach of Basel I. The current framework on Basel II is not a flawless piece of legislation and the current lows in the world of structured finance and credit crisis are opportunities for the Basel Committee to debate on and plug the loopholes in the area of credit risk management. The committee is reviewing whether capital charge for complex structured products like CDOs is commensurate with its risk and complexity.

However, too stringent capital adequacy norms could shrink liquidity (the underlying reason for the credit revolution) on an epic scale. According to George Soros, the rich nations of the world have followed a policy of aggressive credit expansion for over half a century, leading to an across the board asset price inflation, credit expansion and currency devaluations. That phase may well be over, in which event the world will have to learn to live

without easy credit in the future. The issue right now is not so much how to preserve the credit derivative market but how to preserve liquidity of the order of tens of trillions of dollars.

Second, Basel norms also need to be tweaked to address liquidity risks arising from maturity mismatches. Conventional (money creating) banking will always face this risk since it borrows short-term and lends long-term and runs the mother of all Ponzi schemes through “fractional banking” by which it keeps recycling the major portion of deposits. The liquidity risk arising from conventional bank runs is presently handled through state-funded deposit insurance and through the central bank discounting window. Central banks were consequently constrained to pump in huge amounts of funds into the market at concessional, rather than penal rates as mandated by the received wisdom famously attributed to Walter Bagehot.

Following the repeal of the Glass-Steagall act, universal banking also faces liquidity risks arising from positions taken in (non-money creating) investment,

mortgage, business, etc. The sub-prime financial crisis was escalated not through large-scale loan defaults but because assets became illiquid as credit markets simply froze and short-term debt raised to fund long-term investments could not be rolled over. The Ponzi-like structure of fractional banking was replicated in the investment banking segment both in maturity mismatches and bundling and recycling of loans and investments several times over, without the regulatory and prudential norms in place as in the case of money creating banking. The us Fed intervention to rescue Bear Stearns clearly showed that the liquidity risk residing with the banks’ investment business is also effectively borne by central banks/governments because they cannot allow individual banks to collapse as that would have a knockdown effect on counterparties and conventional money creating banks, leading to bank runs as in the case of Northern Rock recently. If this is indeed the case, regulatory oversight of the investment business may have to be brought on par with conventional banking.

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Since the state ultimately covers the liquidity risk arising from both conventional and investment banking, this gives rise to a moral hazard that encourages risky practices. Some market observers favour setting the clock back to restoring the status quo ante prevailing prior to the repeal of the Glass-Steagall act by separating conventional and investment banking. There is, however, a danger of regulatory overkill that throws the baby out with the bathwater. The case for universal banking that led to the Gramm-Leach-Bliley act supplanting the Glass-Steagall act still rests on solid foundations and some tweaking is all that may be required.

Third, there may be a need to take a closer look at the banking emolument structure. The business model of the putatively far more exposed private equities and hedge funds seems to have weathered the credit storm far more effectively than banks since traders and managers had a big direct stake to move nimbly to cover their losses. In the case of banks, however, the moral hazard deriving from sovereign guarantees that encouraged risky behaviour was magnified by the banking emolument structure that rewarded risky practices that yielded high returns during the boom phase of the business cycle. The sum of the bonus contributions in investment banking has frequently exceeded dividend paid to shareholders. The risks taken by these highly paid traders become apparent only during economic downturns that are unrelated to the (generous) annual bonus cycles of banks. There is a structural asymmetry in the banking industry where traders get a good share of the profits but the losses are borne entirely by shareholders. Instead of being primarily based on the previous year's performance, bank bonus schemes need to be more long-term oriented. It has been suggested that only part of the bonus should be paid out in the profitable year, the balance being adjusted against shortfalls, if any, in subsequent years. The accrued unpaid bonus of employees who lose money could be used to cover the losses, at least partially.

Fourth, lending discipline needs to be restored by mandating that the loan originator retains a portion of the original loan portfolio – especially the equity or the lowest credit quality/rated tranches – so

that it is compelled to maintain and monitor credit quality. One of the lessons of the sub-prime crisis is the moral hazard inherent in the “originate and distribute” lending model where there is little incentive for the loan originator to adhere to prudential lending and monitoring standards with the risk being “distributed”.

Fifth, there may be a need to review the list of financial products that only qualified investors can buy. Spreading of risk proved delusive since it was ultimately foisted on borrowers who did not quite understand the complex product they were buying into. Indeed, there has been speculation that whether even directors sitting on the boards of leading investment banks were equipped to fully assess the risks posed by CDOs and SIVs.

Sixth, hedge funds, SIVs and CDS may need to be brought within the regulatory framework. It is not entirely coincidental that the most exuberant players in the sub-prime boom were such unregulated entities.

Seventh, a financial system that can be embroiled in a major crisis without defaults actually taking place requires some tweaking of the “mark-to-market” mechanism. Real estate and consumer loan delinquencies have no doubt been rising from the second half of 2006 but these are by no means alarming measured by historic trends. Ninety-two per cent of all mortgagees continue to pay mortgages on time each month, and only 2 per cent mortgages are in foreclosure, mostly concentrated in the small sub-prime and ARM segment. The values of several inherently sound financial instruments plummeted simply because trading froze, leading to massive write-downs and fire sales that aggravated the decline in valuations. The time has perhaps come to let structured products be traded in regulated exchanges. CDOs, CBOs, etc, are presently traded over the counter, making it impossible to mark such products to market because trading in these products virtually ceased. Exchange-based trading would make price discovery in difficult market situations easier.

Last, who will regulate the regulators? The sub-prime crisis has in particular brought credit rating agencies and central banks under the lens. Since the former

have been arraigned for not maintaining arms length distance from the products they rated, thereby under-pricing risk, they may need to be brought within the ambit of a Sarbanes-Oxley type of act so that there is no occasion for conflict of interest.

New Financial Bubbles?

Central banks have been criticised for loose monetary policy narrowly focused on consumer prices even as asset prices were rocketing. Rapid globalisation has a disinflationary impact on the prices of tradable goods, on which the consumer price index is mostly based. Overheating pressures in the economy are therefore more likely to be reflected in asset prices. While rental prices are included in some consumer price indices, it is difficult to see how asset prices could be similarly incorporated. With growing sophistication and innovation it is difficult to foresee what kind of financial assets would attract excess liquidity. There is already talk of commodities and freight derivatives as new targets of future financial bubbles, for global imbalances and the associated savings glut persists and needs to be parked somewhere. Since asset value appreciation is the major source of funding, consumption and well-being for most people in developed markets, monetary policy response to asset inflation is likely to be strongly resisted especially once the crisis is past.

As for junk bonds and aggressive leveraged buy-outs of companies, they appear to resurface during the boom phase of practically every economic cycle and pose little systemic risk since the losses can be limited to high-risk companies and individuals. It is well known that companies can sustain higher debt equity ratios during boom times and that some, especially commodity-based, are more susceptible during the bust phase, and so prudence dictates that they should not be highly leveraged. The same logic applies to high yield bonds, whose seductive yields can be serviced only during an economic boom. There is, however, a trade-off between return and risk, and there will always be high risk takers who will try to push the envelop as far out as possible.