Government's role as credit insurer of last resort and how it can be fulfilled.*

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Summary

What caused the credit crisis? What will end the credit crisis? What will restore credit markets to normal functioning? This paper answers these three questions. There is of course no single cause of the credit crisis but we make a very simple point about the chain of causation that has so far been largely overlooked. The current crisis has involved a systemic risk event in traded credit markets e.g. for mortgage backed securities or collateral loan obligations, not just the all too familiar tale of bank loan losses overwhelming the capital base of the banking system.

Why has there been a systemic risk event in traded credit markets? Traded credit instruments were designed from the outset to absorb credit risk on the scale that has happened so far or indeed on a much greater scale still. But the market for trading these instruments has been undermined because there is no credible promise to absorb the worst extreme possible risk (monoline insurers made this promise but their promise has not proved credible). The fear at the heart of the current crisis is that even the safest of traded credit instruments (even the so called supersenior that are far stronger than AAA) may fail to payout as promised. The resulting collapse in prices of traded credit is responsible for around half the loss of capital in the word's banking system. Were it not for this systemic risk event in traded credit markets the current crisis would be much more easily contained.

This aspect of the credit crisis can be swiftly resolved by government stepping in as credit insurer of last resort. This action can be taken, under the US Emergency Economic Stabilization Act of 2008, by European governments individually or by the European Union Council of Ministers collectively, in the form of an explicit government backed insurance guarantees against high levels of losses on the most senior structured credit securities.

This is a valuable further short term response for dealing with the current crisis and removes any need to suspend 'mark to market' accounting rules. Also and more importantly such credit insurance of last resort is needed in order to restore liquidity to the markets for trading credit. When credit starts trading freely the banking system will operate normally once again. This is a minimalist form of government intervention that will allow banks to wean themselves off the much broader and much more expensive government support now being introduced and reverse our drift into publically supported and guaranteed banks, with all the problems of governance and incentives which that entails.

* We are grateful for comments on an early draft by Dirk Schoenmaker.

Practical implementation and impact

How might it operate?

<u>As a response to the current crisis</u>
As an immediate further tool for substantially increase banking sector capital (and a better alternative to the suspension of fair value accounting rules) we envisage that

(a) Governments offer insurance to their commercial and investment banks on the senior tranches of all structured credit products which are: (i) secured directly on household or corporate credits (ii) still rated AAA in July of 2008; against failure of repayment of both interest rate and principal.
(b) The insurance is offered for a premium of 40 basis points of remaining par value per annum
(c) Unlike a corporate CDS, the government simply makes up shortfalls of cash flows, the securities will continue to be traded and there is no need for a settlement process
(d) There is an insurance excess (in US terminology a deductible) of 2% of par value and a 50:50 sharing of the next 2% of losses. All further losses are fully covered so that the maximum shortfall on cash payments due is 4%. As discussed below these assumptions set a floor for the value of securities at around 4.5% below par value.
(e) If there is existing private sector insurance, e.g. monoline CDS contracts, then the bank will pay only 10 basis points per annum to the government, in exchange for secondary re-insurance that takes over only when private sector insurance fails e.g. due to failure of the mono-line insurer.
(f) Banks must accept insurance on their entire portfolio of senior structured credit (this is to avoid 'adverse selection' i.e. banks applying for insurance on only their worst loans) but they will have a short time window – say 2 weeks from announcement – for opting out (so the insurance is voluntary and does not require legislation to override shareholder rights)
(g) The plan will only go ahead if there is sufficient uptake by the bank industry as a whole (to limit free-riding); in the event of failure then the same scheme could be re-instated but with legal compulsion and applied to all banks. This would take some time for the necessary legislation to be passed, but helpful as a fall back at the outset so that banks have a strong incentive to take insurance.
(h) The insurance on any tranche holding will be transferrable on sale (i.e. the universe of senior structured notes will be transformed into two classes, insured and uninsured)

<u>As a permanent facility to restore normal operation to the markets for traded credit</u>
A similar facility can be used to support the new issue of structured securities, hence dealing permanently with the funding problems faced by commercial banks subsequent to the closure of the mortgage and asset backed securities markets and re-opening the market for credit structuring.

(a) Offered on a permanent basis for all new asset backed, mortgage backed securitisations conducted by commercial banks. To protect government these

structures will have to pass certain quality standards (AAA rating but also certain other additional criteria, for example limits on the leverage of the issuing institution). Thus the government will have to take on an increased regulatory and oversight role in these markets.

(b) Similar insurance and regulatory oversight can restart issues in the structured credit market, e.g. for CDOs, CLOS etc.

(c) The terms of the insurance can be exactly as described above, a 2% excess and 4% of loss shared 50:50.

(d) The premium for the permanent liquidity facility will be substantially lower than for the emergency insurance now required, but subject to stricter regulation on the quality and appropriateness of structures than was acceptable during the recent boom in structured credit. A per annum premium of 10 basis points (lower than the premium for crisis resolution) seems about right, but this can be discussed further with the industry.

(e) The insurance should be compulsory for banks holding these securities, but might an option for other long term investor that pose less systemic risk, for example an insurance company, investment fund, sovereign wealth fund , overseas government or supranational body to encourage long term investor participation in these markets.

What are the advantages of an immediate government intervention as credit insurer of last resort (providing an insurance guarantee on senior AAA structured credit securities)?

The substantial measures already taken in the US and the UK may not be enough to fully resolve the systemic problems of the banking system and avoid a global recession deeper than any in the past seventy years. Governments need to look also at all other tools that can help them avert this outcome. The key tool as yet not applied is the one proposed in this paper, acting as credit insurer of last resort by providing government insurance on senior AAA structured credit securities. This is a low cost response with powerful impacts:

(a) By raising the value of senior structured credit securities it increases the capital base of the world's banking system of up to $600bn or more

(b) As an off balance sheet instrument, it is easier to implement without being constrained by government borrowing rules

(c) Negligible additional taxpayer costs and risk (there is no downside risk relative to what taxpayers would expect to spend anyway and also makes a substantial expected profit)

(d) No bail out of banks or employees, so no protection of excessive risk taking during the credit boom

(e) No infringement of shareholder rights (shareholders retain both full control and ownership)

(f) A breathing space for designing other actions, including government protection of individuals and financial institutions and auctions of low quality assets.

(g) Maintains full transparency and so does not sow the seeds of a later crisis or delay other measures that need to be taken (unlike for example suspension of mark to market accounting)

(h) Scaled to the size of the problem, so will not need to be topped up later with additional government funds or have to be clawed back because government support has gone too far.

What are the advantages of a permanent government insurance guarantee for these assets?

The financial authorities may not get around to using this particular response to the current crisis (there are several other measures already being tried, albeit somewhat more expensive, that achieve the same end). This does not matter so long as they succeed in stabilising the banking system. But once the banking system is stabilised there needs to be a long term global plan for restoring liquidity to credit markets and getting banks to function normally without extensive government intervention. The real importance of the credit insurer of last resort is that government, by providing insurance guarantees against extreme losses in the most senior structured credit assets at no net cost to taxpayers, can restore the normal functioning of our banks and credit markets:

(a) It is the simplest way of preventing a repeat of the systemic risk event inherent in leveraged portfolios of traded credit, the risk that that has been the chief propagation mechanism of the current crisis. As we explain government is in fact the only agent that can provide an insurance against of the extreme outturns that trigger such systemic risk events: it is the credit insurer of last resort. This sounds like central bank lender of last resort but it is not. This insurance is provided by government not by central bank, to market instruments not to institutions, and should be offered at low cost without need for collateral.

(b) A government guarantee against a repeat of such a system risk event then ensures that there can once again be a deep and stable market for issuing mortgage backed, asset backed, and structured securities that is always open. The re-opening of these markets is a necessary pre-condition for banks and other financial institutions to once again raise low cost wholesale secured funding through issue of structured securities, and thus wean themselves off the intrusive and expensive government intervention that have been needed to deal with the current crisis.

If this is such a good idea why has no-one thought of doing something like this before?

(a) They have thought of several measures like this before. The closest is the proposal of Larry Kotlikoff (Boston University) and Perry Mehrling (Barnard College, Columbia University) that led to powers for insuring bank assets being incorporated into the US TARP legislation (Section 102 of the Emergency Economic Stabilization Act of 2008).

(b) The measure set out here is a variation of the original Kotlikoff-Mehrling proposal, focussed on that part of the troubled credit market that can be addressed most quickly and amended (i) so it can be applied to the full range of structured credit not just US sub-prime mortgage lending (this is necessary because a global solution must also fix the liquidity losses on European mortgage backed securities and the emerging problems in collateralized loan obligations) and (ii) to facilitate new bank funding not just to support bank net worth

(c) A number of other proposed measures can also be interpreted as government backed insurance or guarantees. Government purchase of preferred bank stock has been advocated by many prominent economists. That policy is in effect also a form of insurance, but it protects not against the extreme of the risk distribution, which is still carried by wholesale creditors, but against a part of the distribution next to the extreme tail i.e. it is *not* the most efficient form of insurance for reducing systemic risk. Purchase of troubled assets by the US government resolution program will protect holders from risk and guarantee value, so that is also a form of insurance but again it is a protection against systemic risk only when purchasing the senior structured credit securities. The Federal Reserve and the Bank of England are already swapping Treasury bonds for senior structured mortgage backed securities, albeit at a very substantial haircuts, and so guaranteeing funding cost and availability. The UK government is also now introducing guarantees on a range of short and medium term bank liabilities. These are all sensible actions but they are expensive and intrusive temporary measures.

(d) The key challenge (just as with purchase of preferred stock or other types of insurance) is getting the pricing right. In current conditions this measure can be effective using any premium within a fairly wide range, perhaps 25-90 basis points. We suggest 40 basis points p.a. premium. A higher premium will result in a bigger transfer of wealth from bank shareholders to taxpayers but risks banks rejecting the insurance. For permanent operation we suggest 10 basis points p.a.

Further discussion

What is the economic rationale behind this proposal?

The economic rationale is that it is the job of government to absorb systemic risk, such as is now undermining the global banking system. The systemic risk we face today has some new features, not found in any previous systemic crisis: banks are financially distressed and facing possible insolvency not only because of credit losses on their loan books but also because of (i) 'mark to market' losses on what were thought to be very safe senior structured credit securities; and (ii) the closure of markets for the issue of asset and mortgage backed securities, creating severe funding problems for banks reliant on wholesale liabilities. A government insurance guarantee for the downside tail of risk in the AAA tranches of structured credit is the appropriate way to deal with this new situation.

A systemic risk is one that materialises only when a large proportion of financial institutions are insolvent or in financial distress. Such systemic risk is characterized by its self-fulfilling nature. Because financial institutions are exposed both to each other and also to common credit related collateral such as housing, sometimes in quite complex contractual chains, such financial distress results in a substantial deterioration in the values of financial institution assets, and this deterioration in turns exacerbates the financial distress that first causes it. This risk is inherent in private financial contractual arrangements because private participants can never co-ordinate in a way that can ensure that such systemic risk does not occur.

Systemic risk has emerged today in a new form, not just in the familiar problem of rising loan impairment and falling collateral values (prices of residential and commercial backed property) but also a parallel collapse in the markets for structured credit securities, including asset and mortgage backed securities on which many banks rely for medium and long term funding. Banks have taken on excessive risk but their situation is made much worse by the entirely unanticipated collapse of liquidity in these traded credit securities.

Systemic risk is not just undiversifiable, it is also uninsurable, in the sense that no private insurer can credibly offer to insure it. In the event of the risk being realized the insurer that actively provides such insurance can be expected itself to be insolvent. Such was the fate of AIG. It follows that only government can prevent systemic risk. This is the reason why government and central banks are obliged to take measures that protect the banking system against systemic collapse.

The question then is how is this to be done? Previously, when all lending was on the balance sheets of commercial banks and these banks did not rely much on wholesale markets for funding, government insurance of such systemic risk could be effectively provided through a combination of central bank liquidity provision to interbank markets and a bank safety net, with appropriate prompt corrective action to curtail moral hazard. With the emergence of illiquidity in traded credit as a new systemic risk these tools are no

longer sufficient. Nowadays, when a large proportion of household and corporate credit is wholesale funded, the government response to systemic risk must go further, protecting also the possibility of a systemic collapse in tradable credit prices. This is the rationale for the present proposal. Fortunately this systemic risk is almost entirely confined to the senior AAA tranches of structured credit securities, so such systemic insurance can be provided both effectively and efficiently at little risk to taxpayers.

Why such a big bang in the current situation (an increase in banking sector capital of up to $600bn)?

The reason for such a big impact of a relatively simple and direct measure is that, as a result of the ongoing systemic crisis, the very large bank portfolios of safe senior structured credits have fallen well below any reasonable valuation based on discounted cash flows.

There are three important points to understand about these holdings.

(a) Banks are holding very large portfolios of senior AAA and better structured securities, both as investment bank trading portfolios and as commercial bank treasury portfolios, in total something around $3.5 trillion (see below for the basis of this calculation)

(b) Market values of these securities have fallen hugely and are now far below any reasonable valuation based on the distribution of future cash flows (at least 10% i.e. $300bn below reasonable valuations in early summer of 2008 and now during the height of the crisis far lower still perhaps $450bn or more below)

(c) These market valuations could easily fall yet further still, as fears of recession and financial collapse grow and losses on other categories of structured credit such as collateralized loan obligations mount. Liquidity losses on this $3.5 trillion could easily climb to $1200bn or more.

An advantage of this insurance proposal, in comparison for example with acquiring preference shares in exchange for an injection of capital, is that the benefit of the insurance is automatically calibrated to the size of the problem. The larger the systemic losses the more support provided by the insurance guarantee (and having the insurance in place ensures that the systemic losses never subsequently materialize.)

Where does this statement that banks hold at least $3.5 trillion of safe senior structured credit securities come from? This figure is only an estimate because the size of the tradable credit market is relatively poorly documented and it is only since the beginning of the credit crisis that the industry has begun to publish data for the entire market.[†] The available data reveals that in the US and Europe there are over $7 trillion of structured credit securities outstanding, getting on for twice the size of the entire tradable US government security market. Of this about $5.4 trillion of these structured credits are AAA

[†] This data is now published by the European Securitisation Forum www.europeansecuritisation.com and the Securities Industry and Financial Markets Association www.sifma.org . SIFMA stock data is incomplete and these sources must be supplemented by further data from Inside Mortgage Finance and other industry sources.

or better senior securities (this figure excludes the $600bn or so of double structured products such as CDO of ABS and CDO-squared, which are a double counting and should be netted out). These AAA or better senior structured credit securities in almost all cases can be expected to repay all or very nearly all of their promised cash flows even if there is a deep global recession. Note that the senior AAA or better tranches of US sub-prime mortgage backed securities account for only around $600bn of this total i.e. sub-prime is only part of a much bigger problem.

There are no totally reliable statistics, but banks are known to hold most of these senior securities, especially the very safest 'super-senior' that are considered better than AAA. This suggests a cautious estimate (the true figure may well be higher) of $3.5 trillion for bank holdings of AAA or better senior structured securities. More than anything else it is 'mark to market' losses on these vast portfolios of ultimately safe credit securities that has undermined the capital of the world banking system.

How big has this capital loss been and how big could it become? A variety of casual evidence, both conversations with market practitioners and evidence from published accounts suggests that early summer 2008 senior US sub-prime MBS securities were trading 20-30% below par value, and other structured credits 10-15% below par. These valuations have deteriorated further this autumn as the crisis has intensified so the overall loss of value may well have been as much as 20 per cent of par, whereas even a highly pessimistic projection of underlying cash flows based on an assumption of an extreme recession would result in very small losses on those senior securities that still held an AAA rating in July of 2008. Overall these securities are trading at least 10 per cent and perhaps 20 per cent or more below any reasonable estimate of their fundamental cash flow value.

With our proposed insurance in place, and our suggested premium of 40 basis points per annum, these securities will trade at a minimum of 4.5% below par (see calculation below where the 40 basis point premium is discussed), so there will be an immediate increase in bank capital of up to $600bn or more, depending upon how bad the situation is when the insurance is introduced.

Why then are they trading at such low prices? This is again a consequence of systemic risk, all potential buyers who understand these securities are so severely undercapitalized, that they are unwilling to purchase these securities even at bargain prices. Long term investors such as pension funds, life insurance companies, or sovereign wealth funds might be holders of these securities but they do not understand them and therefore will not acquire them.

Why for such a small buck?

Senior structured credit tranches have a very different risk profile from other structured credit tranches – they were designed to be that way and this is why they are exposed only to systemic risk. Take for example a sub-prime structure of $100bn. About $75bn of this will

be senior AAA or better tranches eligible for the insurance.[‡] In order for these exposures to suffer much more than $25bn of loss there would have to be (say) a fifty percent fall in US house prices from their peak and a 50 percent default rate on the pool of sub-prime mortgages i.e. the government is insuring only the systemic risk of extreme loss on mortgage pools.

Such extreme loss rates will occur on a small number of the riskiest structures, but government will be receiving a healthy premium on all. For example say there is a deep global recession and 10 percent of the insured AAA senior tranches end up calling on government insurance, with an average claim of 10 per cent of par value (this corresponds to a very large 35% loss on the underlying pool of these structures) then government payout on all insured structures will be only 1 per cent of par, against premiums of around 2 per cent collected over five years. Still worse scenarios are possible but in these cases government will have to take control of most banks, in which case government is insuring itself at no net cost to tax payers. This is why there is no effective downside risk to insurance of senior structured credits. This is an important point politically. This scheme does not spend any taxpayer money that would not be spent anyway and meanwhile the government is collecting premiums. There can be a sufficiently severe systemic crisis which requires governments to take ownership of the world's banking system but the insurance scheme does not add to the burden placed on tax payers in the event of such a calamitous outcome.

This is unnecessary, the same end can be achieved simply by the central bank providing liquidity to structured credit markets, and government can then focus on who bears the underlying credit losses.

Central banks can do something to provide liquidity to structured credit markets, for example widening the range of assets eligible for their repo operations to include all senior structured credits. But this is indirect, central bank repo only directly provides liquidity in short term money markets (they control the price of overnight money and lend and borrow against market demand at very short to medium term maturities). The authorities cannot directly provide liquidity in markets for senior structured credit securities. What they can do is to provided unlimited insurance of the extreme tail of credit risk at a fixed price. This in turn puts a floor under the value and this in turn allows trade in these securities to take place uninhibited by the fear of a systemic price collapse. Since these senior structured credit markets are much bigger than the central banks (about five times as big) if they are to do the job the central banks require government backing to make their insurance credible.

Even if central banks could finance all the wholesale funding of the commercial and investment banking sector, it is unclear that they should do so. To date the Bank of England has been imposing conservative haircuts, which makes sense given their focus on

[‡] For further illustration of this 75% figure see the examples given by Gorton (2008), The Panic of 2007, a paper presented at the Jackson Hole central bank symposium.

the core central bank functions of monetary policy and liquidity in money markets. The Fed has a much wider mandate and is lending against any investment grade security and what we understand to be relatively generous haircuts. The great virtue of a government insurance response to systemic distress in financial institutions is that is separates out the issues of valuation from liquidity, and dedicates one government agency to each problem.

Is the 40 basis point pricing set at the right level?

There is a range of pricing that can work, perhaps anything from 25 - 90 basis points although perhaps closer discussion with practitioners can help establish this range more reliably. The premium has to be low enough to persuade banks voluntarily to accept the systemic risk insurance, but not so low that tax payers are exposed to undue risk of loss, or so high that the securities trade at too low a price level to benefit the banks that hold them. Monoline insurers were providing similar insurance before the crisis at around 15 basis points. Now that systemic risk has increased so sharply this is probably below the bottom end of the range of appropriate premia. 90 basis points is getting towards a level where many banks would be reluctant to participate, they would prefer that other banks than themselves pay the insurance premium , in order to reduce the systemic risk, and that they free ride on the benefits.

It is useful to re-express these insurance premia in terms of current market prices. If we (somewhat arbitrarily) assume a 5 year modified duration for these securities (this 5 year duration may not be enough, the tricky issue is prepayment, which is itself sensitive to the systemic risk, but assuming that the systemic risk abates then 5 or 6 years is about right) then 25 basis points is a relative price discount of 1.25% while 90 basis points is a price discount of 4.5%.

But a discount relative to what? In our proposal the security holders can still lose up to 4% of the par value because of the excess of 2% and the shared element of risk. So we end up with a floor on prices (relative to Treasuries) at a discount of between 5.25% (when the premium is 25 basis points and so the price discount is 1.25% + 4%) and 8.5% (when the premium is 90 basis points and so the price discount is 4.5% + 4%) . The par value will also be below treasuries, because these securities originally offered yields of 30 basis points above risk free rates of interest, so par is maybe 1.5% below the value of an equivalent Treasury. Overall the scheme should push prices up to a discount of between 3.75% (5.25%-1.50%) and 7% (8.5%-1.5%) below par. Choosing a 40 basis point leaves us at around 40 × 5 + 400 – 150 = 4.5% below par value. This seems about the right level to end the systemic crisis while still providing good protection to taxpayers.

Systemic insurance can be extended on a permanent basis to newly issued mortgage, asset-backed and other structured securities

The restoration of bank capital to levels where bank solvency is no longer in question is a necessary step in order to end the current credit squeeze. But it is not enough on its own. Banks must also be able to access medium and long term funding at reasonable cost in order for them to offer credit to their customers at a normal spread above market rates. For banks which rely to a large extent on wholesale funding it is essential to obtain this funding on a secured basis, otherwise it is prohibitively costly.

There are different tools available for doing this. In some jurisdictions e.g. Germany, Austria and Denmark there are well developed markets for covered bonds (bank issued bonds secured on loans and subject to very tight quality criteria). The strict quality standards on these bonds have allowed these markets to remain liquid despite the freezing of other credit markets. In the United States the government sponsored and now government owned enterprises Fannie Mae and Freddie Mac have guaranteed credit risk on conforming mortgages and thus insure all the systemic risk on the agency backed mortgage backed securities. These securities have continued to be issued and traded.

In other markets, notably the United Kingdom, there is at present no substitute for mortgage backed securities as medium to long-term secured fundraising instruments and as a result, since these markets have closed, banks in the UK have come under extreme funding pressure.

It has been suggested that the UK and other countries where banks face similar funding pressures should introduce their own covered bond markets as a substitute for the now inactive securitization markets. But it will be much easier to work 'with the grain' and use government backed insurance and accompanying regulation to restart the markets for new issue of mortgage, asset-backed, and structured securities, rather than start a market which does not currently exist.

At the same time, the provision of systemic risk insurance for these markets will have to be accompanied by a greater degree of regulatory oversight, much closer than was the practice during the rapid growth of structured credit over the past five years. There is likely to have to be a regulatory agency which plays a quality control role and approves securitization structures for government insurance. These quality standards need to be established. They are likely to have to ensure both the quality of the mortgage backed securities themselves and also the appropriateness of the business strategies for which they are used, putting some limits for example on the proportion of securitized funding, so as to rule out extreme wholesale funding strategies such as that adopted by Northern Rock PLC in the UK.

A contributory factor to the scale of the current systemic crisis is that a relatively small proportion of the senior structured credit securities were sold to long term hold to maturity investors. Most were retained by banks either in their trading portfolios or as available for sale treasury securities. This in turn meant that they had to be 'marked to market' under fair value accounting rules, and the resulting mark downs have exacerbated the current undercapitalization of the banking sector.

When these securities are part of hold to maturity portfolios of long term investors, such as pension funds, life insurance companies, sovereign wealth funds or overseas governments then they no longer pose a systemic risk to traded credit markets. In these cases the government provision of systemic risk insurance is not necessary and these investors should be able to reclaim the 10 basis point premium. This will in turn provide an incentive to selling these securities to long term hold to maturity investors rather than retaining them on bank balance sheets.

There is a danger that, as a reaction to the current crisis, such heavy regulations are introduced as to discourage permanently all structured credit activity other than vanilla mortgage backed and asset backed securitizations. This would be a mistake since the weakness of these arrangements was not the innovations they introduced per se but rather that the structuring did not take account of the inherent systemic risk in trading and holding these products. A further advantage of introducing insurance for the systemic risk in senior structured credit products is that this will provide the best opportunity for re-establishing structured credit for corporate and other exposures on a more stable basis. Again we would envisage all such structures being subject to regulatory guidelines to maintain basic standards of quality and risk exposure, as well as rating agency opinions on the risks of individual tranches. All qualifying senior securities would pay the same 10 basis point systemic risk insurance, reclaimable by long term hold to maturity investors.

Comparison with other policy responses

It is useful to compare this policy proposal, for insurance guarantees of senior structured credit assets, with other government policy actions. Governments will take several other steps to address the credit crisis, including purchase of troubled assets which may well be appropriate for the lower grade structured credit tranches below AAA, provision of additional bank capital to prevent bank failure, low interest loans and grants to borrowers, subsidies to financial institutions to prevent foreclosures, increases in bank deposit insurance, guarantees of other bank liabilities, purchase of foreclosed assets, and other measures such as limits on bank compensation, the introduction of regulations on risk –taking by banks, hedge funds and other leveraged investors.

Some government actions have already been taken, for example as announced in the UK on October 8th 2008, a government purchase of preference shares in banks with cash raised by the issue of government bonds. Like government backed insurance of senior structured credits this is also a form of risk protection in exchange for a fee, except now the government is insuring not the extreme tail of the return distribution but a section of the distribution beside the extreme tail and is covering all asset risks not those specific to an individual security. There are some other disadvantages of preferred stock issue relative to insurance of the senior structured credits, that suggest that it may be desireable to use insurance of structured products as a further tool for increasing bank capital.

- purchase of preferred stock may run directly into constraints on government borrowing, for example the Maastricht rules that apply to the Euro zone countries.

- It is harder to assess the appropriate premium rate (i.e. the preferred stock interest rate) on a bank's assets taken as a whole. The appropriate premium rate should vary from bank to bank and take account of other potentially hidden risks

- It is also difficult to determine what amount of preferred stock issue is appropriate. The UK government has started with £25-£50bn. Is this enough or does it need to insure a larger proportion? Better, either as an alternative or accompanying step, to insure the senior structured credit assets and then it will be clearer how much more assistance of this kind is required.

- Purchase of preferred stock does nothing directly to re-open the market for new issue of asset backed and mortgage backed securities. These markets will re-open without government support once it is clear that the global economy and mortgage and consumer debt markets are recovering, but this could take many months if not several years. Government insurance of systemic risk, on an ongoing basis, will help get these markets to re-open much earlier than without government intervention.

Note that these two tools may work better for different types of institution. The largest portfolios of senior structured credit are held by investment banks; indeed difficulties in financing these large portfolios was the principal factor triggering the failures of both Bear Stearns and Lehman Brothers. Therefore government insurance guarantees of existing portfolios of senior structured credit is particularly effective at restoring the capital of investment banks with such large structured credit exposures in their trading portfolios. It will not be so effective at increasing capital in commercial banks with relatively small holdings of these kinds of securities. At the same time it is commercial banks, in need of medium and long term secured finance, rather than investment banks, that will benefit most from a re-opening of the markets for new issue of mortgage and asset backed securities. It is clear that the two tools – purchase of preference stock and insurance of senior structured assets – are complementary and can be used together to most effectively restore systemic stability to the banking sector. Indeed it is possible for institutions to pay for systemic risk insurance by issue of preferred shares rather than paying a cash premium.

Another policy, one that has already been pursued by both the Federal Reserve and by the Bank of England, has been to conduct asset swaps, temporarily exchanging Treasury bonds for mortgage backed securities. This policy helps banks with their funding problems, because they can raise short term repo finance at good rates against this high quality collateral, but it does not address the underlying problems of inadequate capital and lack of liquidity in traded credit markets. It is therefore better that these measures are eventually replaced with a permanent arrangement for providing government insurance of the systemic risk in senior structured credit products that cannot be provided by private insurers.

The problem with most remaining proposed measures is that while they can be effective, they take some time to get right or can have undesirable incentive effects. For example TARP will take some actions that are similar to those of the 1980s US resolution trust

corporation, purchasing higher risk (we presume equity and mezzanine not AAA senior) structured credits from banks and then managing them. TARP proposes using auctions to find the right prices. But this will take some weeks if not months to set up, since the auctions have to be done on a security buy security and issue by issue basis, i.e. more than 50,000 auctions just to deal with sub-prime mortgage backed securities alone. The immediate systemic threat of bank's inability to access short and medium term funding can also be addressed by government guarantees of some short term wholesale liabilities (as was also announced in the UK on 8th October, 2008), but this removes much of the discipline that is provided by privately provided debt and creates a further problem of what to do when such guarantees are removed. In a similar way, proposals to temporarily suspend mark to market accounting rules or allow banks to reclassify assets as for example 'hold to maturity' so that they appear as more valuable on their balance sheets remove discipline and create problems when they come to an end. Some of the measures may be appropriate as a crisis measure, but in the course of time they can be replaced by the permanent facility for insuring of systemic risk in traded credit.

Conclusion

This paper identifies the absence of a credit insurer of last resort as the critical reason for the extent and global nature of the current credit crisis. Only government can do this job. It cannot be undertaken by any private sector insurer because they cannot guarantee their own solvency in the event of an extreme credit crisis.

This sounds like central bank lender of last resort but it is not. This insurance is provided by government not by central bank, to market instruments not to institutions, and while it can be offered unstintingly and at a penalty rate cannot be offered against collateral.

Government can act as credit insurer of last resort in current markets through a program of government backed insurance of AAA senior structured credit securities. This is a powerful and accurate weapon available virtually fully loaded and ready to use in order to address many dimensions of the current credit crisis. Permanent credit insurance of last resort in this form is also the minimalist government intervention required in order to restore the normal functioning of banking and credit markets.

The public authorities need to pay close attention for two reasons. First, while major steps have already been taken by financial authorities around the world, more actions may still be needed to avoid systemic collapse of the global banking system and so they should be aware of this further powerful tool available in their locker, should they choose to use it. In particular this is a way of restoring security values to reasonable fundamental values without taking the controversial and unnecessary step of suspending or altering mark to market accounting rules.

The absence of tax payer exposure also makes the policy ideal as a co-ordinated government response. Because there is no burden there is little argument about who provides the insurance. In fact governments make a profit and so should be queuing up to provide it.

The second reason is that this is the one government intervention that can revive activity in structured credit markets. Investors and traders will once again participate freely in these markets because the downside risk for holders of safe senior structured credits is then reduced to an acceptable level and this in turn removes the possibility of any recurrence of the present systemic crisis in traded credit.

Reopening of the primary new issue market for mortgage backed, asset backed and other structured credit securities will then allow banks to directly raise their own funding in competitive markets without the heavy costs of government or central bank support. It is thus an efficient long term replacement for the measures (such as asset swaps, liability guarantees etc.) introduced in haste as a response to the current crisis.