

UNITED STATES ECONOMICS FOCUS

11th Nov. 2008



Further capital losses to restrict US bank lending

- Bank capital is coming under increasing pressure from the seemingly never-ending cycle of asset write-downs and mounting loan defaults. The Treasury's plan to inject up to \$250bn in public funds directly into the banking system is an important first step in helping banks to rebuild their capital bases. However, our latest calculations suggest that **US banks will chalk up additional losses of \$450bn over the next two years**, equivalent to 3% of GDP and 45% of existing bank capital.
- Normally profits are rising rapidly enough that banks can use their retained earnings to provide the increase in capital base needed to fund new lending. But earnings have dried up over the past year and there is little prospect of any meaningful turnaround soon. There is also little scope for reducing dividend payments further, or raising interest rates charged to borrowers. In short, **the public money on offer right now won't be enough. If banks can't raise even more capital, from either public or private sources, they will ultimately be forced to curb lending.**
- Admittedly, banks do have other options. They could simply do nothing as the losses mount and allow their capital ratios fall. Based on our projected losses, **the average Tier 1 capital ratio would fall from 10% now to slightly below 6%**, leaving it still above the regulatory minimum. In reality, however, banks are more likely to try to increase their capital ratios rather than allow them to fall.
- Banks could also try to sell assets; either parts of the business or the securities on their balance sheet. Unfortunately, prospective buyers are few and far between these days. The Treasury still seems to be the most likely buyer for the illiquid mortgage-backed securities that banks are saddled with.
- In a worst case scenario, **if banks were unable to raise any more new capital or sell assets, maintaining capital adequacy at current levels would require shrinking their \$8000bn portfolio of loans by \$4500bn, or 45%, equivalent to more than 30% of nominal GDP.** Such a decline would rival the magnitude of the collapse in bank lending during the Great Depression, when the value of outstanding bank loans fell by close to half between 1928 and 1935.
- In reality, banks will respond to future losses by employing a combination of the various options available to them. **We expect banks to raise \$350bn in new capital** to offset partially the \$450bn in losses. Up to half of that new capital could come from the government. However, banks will increasingly find themselves competing for public funds with other types of financial institutions (i.e. insurers) and other sectors, such as the autos industry. **The upshot is that we expect banks will be forced to reduce their stock of loans by \$100bn, or 12%. The risk of such a decline is another reason for suspecting that this will be a severe and prolonged recession.**

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Further capital losses to restrict US bank lending

What started out as a housing crisis is now something much more pernicious. What we are seeing is a comprehensive deleveraging of the global financial system. This is now, first and foremost, a banking crisis. Until recently, that banking crisis has had surprisingly little impact on the real economy. However, we fear all that is going to change over the next couple of years.

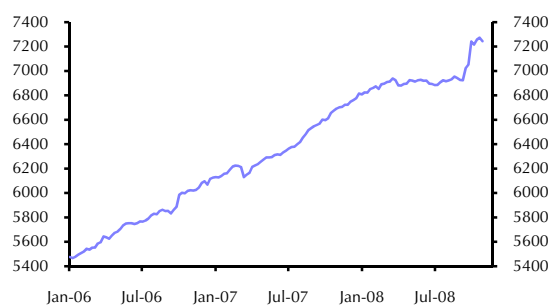
Bank capital is coming under increasing pressure from the seemingly never-ending cycle of asset write-downs and mounting loan defaults. The recently announced recapitalisation of banks using public funds will help, but it may not be enough. At least the Treasury finally seems to have realised that the root of the crisis is not the lack of liquidity in the mortgage-backed securities market, which the original TARP was designed to address, but the lack of capital in the banking system. Unfortunately, given the \$450bn in additional losses that we now expect the banks to chalk up, they will eventually need a lot more capital than the \$250bn that the Treasury is currently offering.

Banks have four options: they can allow their capital ratios to fall, sell assets, raise more capital (from private or public sources) or reduce the size of their loan portfolios. We expect banks to have only limited success with the first three options meaning that they will be forced ultimately to shrink their loan books. That contraction in credit will hit consumption and investment hard, preventing any meaningful economic recovery until well in to 2010.

The stock of outstanding bank loans has already been largely stagnant for the past few months. Admittedly, most recently there has been a massive surge in bank lending. However, that surge is mainly due to involuntary lending as banks have been forced to honour prearranged liquidity backstops for firms shut out of the commercial paper market. (See Chart 1.) Now that the Fed has succeeded in unfreezing the commercial paper

market, we expect to see the stock of bank loans drop back equally as sharply.

CHART 1: OUTSTANDING BANK LOANS & LEASES (\$BN)



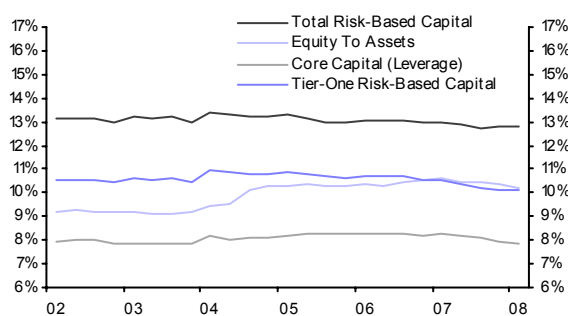
Source – Thomson Datastream

In this *Focus* we concentrate on quantifying the overall size of the losses banks are likely to face in the next couple of years and what impact those losses will have on their capital base and ability to lend. We will address the consequences for economic growth in a separate *Focus*.

What is happening to capital ratios?

The FDIC's quarterly figures for all depository institutions (that is commercial banks as well as thrifts operating in the US) show that the various capital ratio measures lie between 8% and 13%. (See Chart 2.) There has been some limited deterioration in these ratios since the problems in sub-prime lending first surfaced in early 2007, but they remain well within the normal range.

CHART 2: DEPOSITORY INSTITUTIONS' CAPITAL RATIOS



Source – FDIC

Tier 1 capital (the highest form of permanent capital involving no fixed costs) stood at just over \$1000bn at the end of the second quarter. The Tier 1 capital ratio (i.e. the ratio of capital to risk-weighted assets) was 10.1%, down from 10.5% a year earlier, but still well above the regulatory minimum of 4% set under the Basel II regulations.

The \$250bn injection of capital by the Treasury should theoretically raise the Tier 1 capital ratio to 12.5%. Unfortunately, it is not that simple. We also need to consider the additional losses that banks are likely to incur.

What is happening to bank balance sheets?

Table 1 summarises the balance sheet of US banks at the end of the second quarter. On the asset side, banks held roughly \$2000bn in securities. Those securities holdings were dwarfed, however, by the near \$8000bn that banks have loaned directly to households and firms. Over the next few years, bank capital will be squeezed further by additional write-downs of the value of securities holdings and the rising cost of loan defaults. In this next section we quantify what we think the cost of those write-downs and defaults will be.

Estimating future losses on holdings of securities

Banks still own roughly \$2trn in securities, but slightly more than half of those holdings are either Treasury bonds or other bonds now fully backed by the Federal government, in particular the mortgage-backed securities issued by Fannie Mae and Freddie Mac. Banks only have about \$360bn in privately issued mortgage-backed securities along with roughly the same amount again in securities linked to corporate debt.

Up to now, the more than \$300bn in losses that US banks have already reported has been mainly due to write-downs on the value of these new-fangled mortgage-linked securities. Further write-downs are likely as house prices continue to fall and the economy falls into recession, with CDOs linked to the corporate sector now looking particularly vulnerable. At the same time, however,

the Treasury's TARP will get some of these securities off banks' balance sheets and could even lead to an increase in the value of the securities that remain on banks' balance sheets.

TABLE 1: ASSETS & LIABILITIES OF US BANKS (Q2 2008)

	\$bn
Total Assets	13,300
Securities	2,017
Government Securities	1,193
Privately-Issued CMOs & Mortgage-Backed Securities	361
Net Loans & Leases	7,851
Residential Mortgages	3,011
Construction & Land Development	627
Commercial Real Estate	1,019
Commercial & Industrial	1,492
Other Consumer Loans	1,069
Total Liabilities	11,949
Equity Capital	1,351
<i>Memoranda:</i>	
Tier 1 (Core) Capital	1,013
Total Risk-Weighted Assets	10,025
Derivatives Outstanding	183,302

Source - FDIC

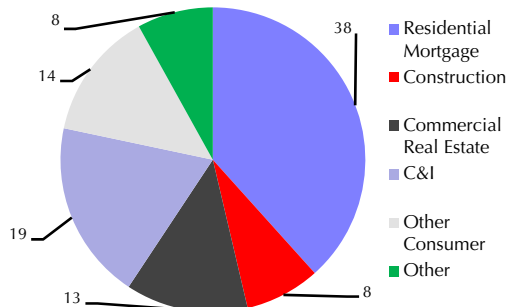
Accordingly, our working assumption is that banks report another \$75bn in losses on securities write-downs which, compared with the losses over the last 12 months, would be a relatively modest sum.

Over the next couple of years, however, we fear that banks will see an explosion in losses due to defaults on good old-fashioned loans.

Estimating future losses on loans

US banks have loaned out almost \$8000bn, nearly all of it to domestic households and firms. 38% of those loans were for residential mortgages, 8% were for construction and land development, 13% were for commercial real estate, 19% were commercial and industrial loans and 19% were other consumer loans (such as credit cards). (See Chart 3.)

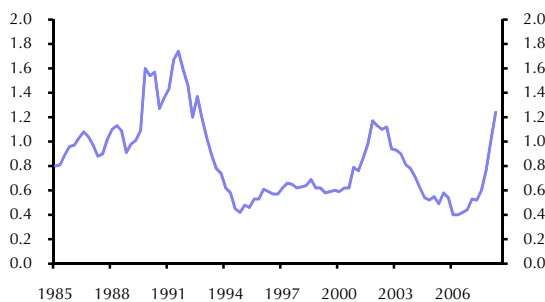
CHART 3: BREAKDOWN OF BANK LENDING (%)



Source – Thomson Datastream

Banks are now seeing the charge-off (or default) rates on those loans begin to rise rapidly. The net charge-off rate across all loans hit 1.2% annualised in the second quarter of this year, up from a low of 0.4% in 2006. (See Chart 4.)

CHART 4: CHARGE OFF RATE (AS A % OF TOTAL LOANS)

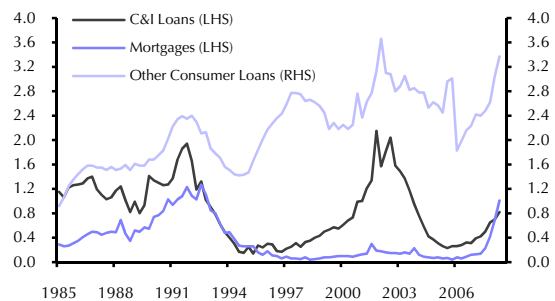


Source – Thomson Datastream

With an overall loan portfolio worth nearly \$8000bn, that 1.2% charge-off rate is equivalent to annual losses on defaulting loans of almost \$100bn. But this may be only the tip of the iceberg. In the early 1990s, even though house prices didn't fall nationally, the default rate hit nearly 2%. With house prices already down by nearly 20%, the rate could easily hit 2.5% this time, which would be equivalent to annual losses of \$200bn a year.

The jump in the overall default rate is not just because of the problems in the residential housing market either. The default rates on all types of loans have begun to surge. (See Chart 5.)

CHART 5: CHARGE OFF RATE (AS A % OF TOTAL LOANS)

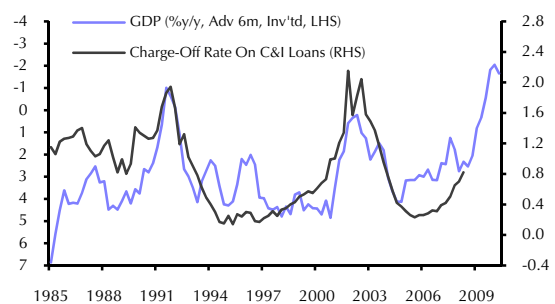


Source – Thomson Datastream

Summary of expected future bank losses

Our biggest concern is that, with property values still falling, the economy in a severe recession, corporate profits plummeting and unemployment already close to the peak it reached in the last downturn, default rates will climb even higher. As an example, Chart 6 illustrates the close relationship between economic growth and defaults on corporate loans. Our forecasts for GDP growth are consistent with the C&I loan default rate more than doubling from 0.8% now to above 2% next year. Based on nearly \$1500bn in outstanding C&I loans, a 2% plus default rate is consistent with annual losses of more than \$35bn.

CHART 6: CHARGE OFF RATE (AS A % OF TOTAL LOANS)



Source – Thomson Datastream

Over the next couple of years, we now expect banks in the US to report losses on loans of an additional \$375bn. (See Appendix for more details.) Add in the \$75bn in securities write-downs and we think that banks will lose \$450bn in total. (See Table 2.)

TABLE 2: PROJECTED BANK LOSSES FOR 2008-2010

	Projected Loss Over Next 2 Years
<i>Securities:</i>	
Total	75
<i>Loans:</i>	
Residential Mortgage	150
Other Consumer	85
Comm'l Real Estate	65
C & I	75
Total	375
Grand Total	450

Source – Capital Economics

These estimates may seem outrageously high, but they are only slightly bigger than the latest projections from the IMF in its *Global Financial Stability* report. To put those \$450bn of losses in context, they would be equivalent to 45% of existing bank capital, more than 3% of GDP and they would easily exceed the \$250bn the Treasury has initially committed to boosting bank capital. In total, the IMF now expects global financial losses to reach almost \$1.5trn.

What can banks do?

So how will banks respond to this destruction of their capital resulting from those financial losses? They have four options: they can do nothing and allow their capital ratios to fall. They can sell assets: either parts of the business or the securities on their balance sheet (possibly now to the TARP fund.) They can try to raise more capital to offset those losses, either from public or private sources. Finally, they can reduce their stock of loans. We examine each of these options in turn, starting with the feasibility of simply doing nothing.

Option 1: Allow their capital ratios to fall

Based on our estimates that future bank losses will add up to \$450bn over the next two years, banks could simply sit back and do nothing and their

capital ratios would still only fall from 10% now to 5.7%, leaving it above the regulatory minimum.

So why not let capital ratios fall? It could be argued that this sort of situation is exactly what the regulations were designed for. However, recent experience with Bear Stearns, Lehman Bros. and AIG has illustrated that any hint in the financial markets of a capital shortfall at a bank can rapidly lead to a run on that bank. At the very least, the bank would see its funding costs soar, even if other banks were still willing to do business with it.

Moreover, different banks have different exposures to the credit crunch. And what happens to individual capital ratios could be even more important than what happens to the average. Even if the average doesn't drop too sharply, some individual banks may see big enough falls to force them to take action. The upshot is that while letting their capital ratios decline is a workable solution for banks in theory, in practice we suspect it would prove to be suicidal.

Option 2: Sell assets

Banks aren't going to find selling parts of their business particularly easy either. Prospective buyers are pretty thin on the ground these days.

More generally, in thinking about the financial system as a whole, one institution buying part of another simply shifts the problem around. After all, the purchasing institution has to find the money from somewhere and that money could well come at the expense of funding to the corporate or household sector.

So will the Treasury's TARP, designed to buy up mortgage-backed securities, solve the crisis? The original TARP has been somewhat overshadowed by the subsequent decision to use more of the \$700bn in a direct recapitalisation of the banks. If the Treasury does still buy mortgage-backed securities, however, those purchases could improve liquidity and perhaps the flow of credit between financial institutions. Unfortunately, the only way the TARP would have any meaningful

impact on bank capital is if it vastly overpaid for the securities it is buying. Under those circumstances, banks might be able to book a profit from the sale, which could be added to their existing capital, or at least raise the value of the securities still on their balance sheets.

What the Treasury finally realised, however, is that it would be more effective to simply boost bank capital directly. As most of the governments in Europe have also realised, the leverage inherent in the banking system means that a direct injection of capital in exchange for preference shares is a much more cost effective way to fix the problem.

Option 3: Raise new capital

It has to be said that, up to now at least, financial institutions have been remarkably successful in raising new capital to replace what they have already lost. According to Bloomberg, US financial institutions have raised more than \$350bn, compared with more than \$430bn in losses. Unfortunately, we suspect that raising new capital from private sources will become a lot harder over the next couple of years, particularly after the earth shattering events of the past few months. Private investors simply won't be willing to throw good money after bad.

Of course, normally profits are rising rapidly enough that banks can use their retained earnings to provide the increase in capital base needed to fund new lending. However, earnings have dried up over the past year and there is little prospect of any meaningful turnaround soon, not while wholesale funding costs remain so high. There is also little scope for reducing dividend payments further because they have already been slashed.

One way that banks could improve their profitability is to raise the interest rates they charge borrowers. However, that would also lead to a decline in borrowing and a reduction in economic activity, which is ultimately what we want to avoid.

Thankfully, governments have decided to ride to the rescue. The government of nearly every major economy has now pledged some form of direct recapitalisation of that country's banks using public funds. At first glance, the sums involved appear to be quite impressive: up to \$250bn available in the US with half of that going to the nine largest domestic banks. Existing bank capital is only \$1000bn, so that injection is equivalent to boosting capital by 25%. However, those injections of capital from public sources won't be enough to fully offset the \$450bn in future losses that we expect banks to chalk up over the next couple of years.

The upshot is that we think the Treasury will eventually need to inject even more capital into US banks to cover these additional losses. However, this should still be a manageable problem. After all, even if losses in the US reached \$1trn, that would still "only" be 7% of GDP. It sounds very high compared with post-war deficits run domestically, but Japan's government ran deficits bigger than that for several years in the 1990s, while the US has run large deficits during war time.

Our fear, however, is that the public injections of capital from the Treasury could "crowd out" new private capital. Private investors could balk at the prospect of putting money into banks when those banks are required to pay stiff dividends to the government before other shareholders receive their payments.

In addition, while the Treasury doesn't have any formal voting rights, investors may worry that the new administration could end up having an explicit say in how those banks operate: presumably for the greater good rather than pure profit. After all, the Treasury didn't explicitly force the initial nine banks to take its money either – yet they all did with minimum fuss, even though some would evidently rather not have done so. The new administration might be tempted to use the same

kind of Tony Soprano style diplomacy to force the banks to lend more.

That brings us to the bigger question of how these quasi-nationalised banks will operate in this brave new world of public funding. In particular, will they deploy their new capital by making new loans as governments would evidently like, or will they hoard it and concentrate on consolidating their financial position? There is a clear tension here between what governments would like the banks to do and what banks themselves would like to do. This is one dimension of the recent recapitalization plan that hasn't received much attention.

At this stage, there is no need to be concerned about government interference yet. However, we suspect that the more money governments are eventually forced to commit to bailing out the banks, the more control they will want over how it is used. The government bail out was exactly the right thing to do, but it has put us on a new path and we don't yet know where that will eventually lead. It is worth remembering that when Marx and Engels wrote the Communist Manifesto more than 150 years ago they outlined ten steps needed to achieve the revolution. Step number five was the "centralisation of credit in the hands of the state, by means of a national bank with state capital."

Of course, it is worth remembering that even if governments force lenders to lend, they can't force borrowers to borrow. The other tension here is that to protect taxpayers, the Treasury is demanding a 5% annual return on its money. Under those circumstances, banks will need to charge fairly stiff interest rates on their loans, making it even harder to find willing borrowers. A 5% interest rate may not sound like too much now, but it might in a year or two from now if deflation sets in and prices start falling.

In short, even if the Treasury increases its stake in the banks to match their future losses, we may still see a reduction in bank loan portfolios, either because banks will hoard the capital or borrowers will turn out to be few and far between.

Option 4: Reduce the stock of loans

In a worst case scenario, if banks were unable to raise any more new capital or sell assets to offset the \$450bn in additional losses, then keeping the Tier 1 capital ratio at the current 10% rate would require shrinking their \$8000bn portfolio of loans by \$4500bn, or 45%. A decline of that magnitude would be equivalent to more than 30% of nominal GDP. Such a decline would rival the magnitude of the collapse in bank lending during the Great Depression, when the value of outstanding bank loans fell by close to half between 1928 and 1935.

Conclusion: The most likely outcome

In reality, banks will respond to future losses by employing a combination of the various options available to them including raising new capital, selling assets and shrinking their loan books.

There is clearly a high degree of uncertainty surrounding how successful banks will be in pursuing each of these options. However, we believe the most likely scenario is that over the next couple of years banks will raise \$350bn in new capital to offset partially the \$450bn in losses. That would represent a capital replacement rate of roughly 75%, which is in line with what we have seen over the past year.

Up to half of that new capital could come from the government. However, banks will increasingly find themselves competing for public funds with other types of financial institutions (i.e. insurers) and other sectors deemed strategically important, such as the autos industry. We also suspect that banks will become more reluctant to pursue public funds if the strings attached become more onerous.

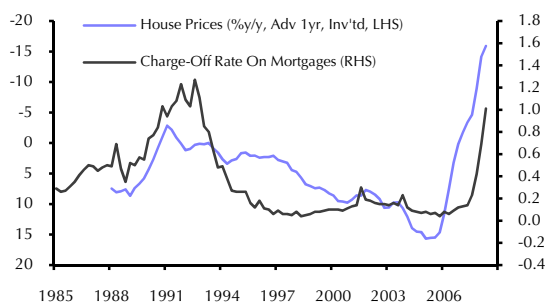
In addition, we expect banks to reduce their stock of loans by \$100bn, or 12%. We intend to examine what impact this potential decline in bank lending would have on economic activity in a separate *US Economics Focus*, to be published soon.

Appendix: Quantifying future bank losses

1. Residential mortgages

The decline in house prices over the past year is consistent with the charge-off rate on mortgages rising to a record high of at least 2% by the end of the year, from 1% in the second quarter. (See Chart 1.) A charge-off rate of 2% would be equivalent to annual losses of \$75bn on residential mortgages alone.

CHART 1: MORTGAGE CHARGE-OFFS & HOUSE PRICES



Source – Thomson Datastream

However, the actual outcome could be much worse than that for two main reasons.

First, there is the potentially non-linear relationship between falling house prices and soaring loans defaults, which may explain why the charge-off rate hit 1.4% in the early 1990s even though house prices only fell in a very select number of areas.

With an average loan-to-value ratio value of 90%, it isn't until house prices have fallen by 10% that borrowers begin to slip into negative equity and banks start to accumulate losses. However, once house prices have fallen by 10% then defaults and losses will begin to mount very quickly, particularly in the US where non-recourse clauses in mortgage loans mean that lenders cannot pursue borrowers to recover losses.

Unfortunately for lenders, house prices may already have fallen by anything up to 20%, pushing prices back down to levels last seen in mid-2004. If, as we expect, prices fall by another 10% over the next year, returning them to their

2003 levels, then the number of borrowers who are “upside down” on their loans would explode. However, there are inherent lags between declines in house prices and banks actually registering a loss. For a start, banks won't begin foreclosure proceedings until a borrower is at least 90 days behind on the payments. The actual process is probably taking a lot longer than that right now because the explosion in foreclosures is overwhelming the system. Under those circumstances, the full impact of the housing downturn on mortgage losses may not become apparent until next year and conditions may not begin to improve until 2010.

How much could banks potentially lose now that house prices have fallen back to their 2003 levels? Since the end of 2003, banks have increased their portfolio of residential mortgage loans by roughly \$900bn, or 40%. Even if only 20% of those loans ended up in default and banks were able to recoup 60% of the value of the loans through selling the properties, the net loss on residential mortgages would be nearer \$100bn.

However, the gross flow of new mortgages originated by banks since then is probably a lot higher than that. Admittedly, not all those loans are going to default and even if they did the bank would be able to recoup some proportion of the loan by selling the house. Nevertheless, it is plausible that, in a worst case scenario, over the next couple of years banks could end up losing closer to \$200bn.

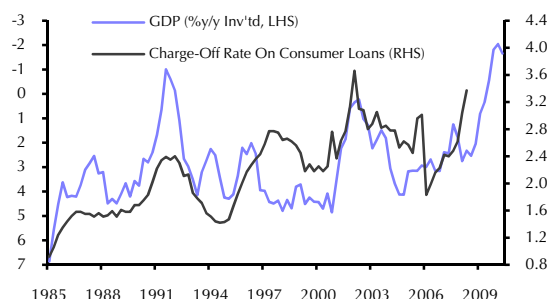
That is particularly true since banks may not find it quite as simple to recoup their losses through selling the foreclosed homes because in many cases they aren't first in line for the proceeds. \$893bn, or 30%, of the roughly \$3000bn in mortgage loans banks have on their balance sheets are either junior lien loans or home equity loans. Banks won't get a cent back on those loans until the owner of the first lien loan is fully repaid

which, let's face it, isn't going to happen if house prices fall by 30% nationally.

2. Other consumer loans

The charge-off rate on other consumer loans, including credit cards and car loans, has also been rising rapidly over the past couple of years, putting it close to a record high. With the unemployment rate climbing sharply and the economy seemingly headed for a severe recession, we suspect that the charge-off rate on consumer loans will soar. (See Chart 2.) We have assumed as our central scenario that the rate hits 4% by the end of this year, but we wouldn't rule out an even bigger increase. A charge-off rate of 4% would be equivalent to annual bank losses on consumer loans of roughly \$40bn a year.

CHART 2: OTHER CONSUMER LOANS CHARGE-OFFS

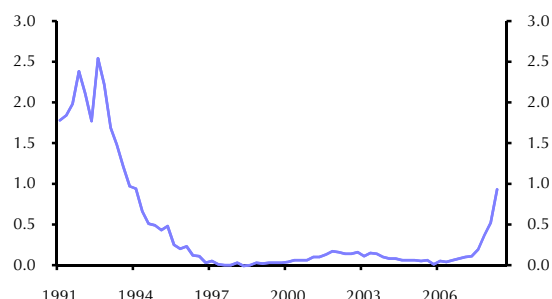


Source – Thomson Datastream

3. Commercial real estate

We also need to consider the potential losses on commercial real estate. The charge-off rate on commercial real estate has shot up to nearly 1% in the second quarter from close to zero last year. (See Chart 3.) However, this could be just the tip of the iceberg. The charge-off rate hit 2.5% in the real estate bust and junk bond collapse of the early 1990s and we suspect it will get close to those highs again over the next couple of years, resulting in annual losses of more than \$30bn.

CHART 3: COMMERCIAL REAL ESTATE CHARGE-OFFS (%)



Source – Thomson Datastream

4. Commercial & industrial loans

Finally, as we illustrated in the main text, the decline in GDP is consistent with the charge-off rate on commercial and industrial loans rising to more than 2% by early next year which, given that banks have nearly \$1500bn of C&I loans on their balance sheets, would be consistent with annual losses of \$35bn.