Financial Markets Highlights November 2007[*]

I. Overview

Over the summer, financial markets weakened substantially, with problems in the US subprime mortgage sector having wider repercussions for the global financial system

Over the summer, financial markets weakened substantially as some of the risks that had built up during a period of easy financing, in particular in the housing market, materialised. Volatility has increased, and while equity markets have regained strength, tensions remain on credit markets.

Problems with loan quality in the subprime mortgage sector forced the failure of some lenders in the primary market, but had much wider repercussions, figuring prominently in solvency problems in institutions outside the United States and contributing to increased market volatility and the virtual drying up of liquidity in the interbank and short-term money market. Major central banks have responded to the crisis with emergency injections of liquidity, and the Fed has also lowered the federal funds rate in order to deal with the crisis and prevent stronger effects of the market turmoil on the wider economy. Meanwhile, as a consequence of the crisis, leveraged buyout activity has slowed and many announced deals are either being repriced or cancelled.

Policy makers and the financial community are discussing regulatory and other responses to the crisis, with a view to greater transparency of risk transfer mechanisms,

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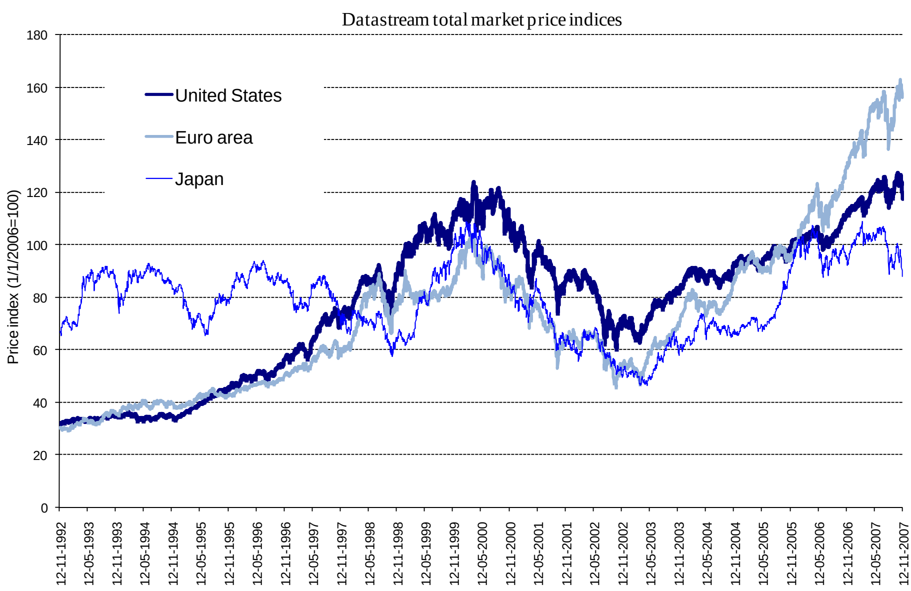
more scrutiny in mortgage lending, and more realistic assessments of new, complex instruments by rating agencies.

II. Financial market outlook and repercussions of the recent financial market turmoil

After a substantial equity market correction over the summer…

In July and August, financial markets began to weaken and became more volatile as some of the risks that had built up during a period of easy financing materialised. Even though various observers and supervisory institutions had issued warnings previously, market reactions to negative news had not been very severe or protracted before. But a more serious correction in February in reaction to jitters on the Shanghai stock exchange and subprime woes may now be seen as precursors to the much larger correction that started in July (Figure 1).

Figure 1. Major equity markets developments



Source: Thomson Financial Datastream.

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… major market indices have been rising again

However, two observations can be made: this equity market correction, even though the largest since the post-2000 downturn, has not been very pronounced by historical standards. In mid August, major markets reversed their downward trend and most have by now regained pre-correction levels, although Japan has lagged behind the US and the European market.

Thus far, equity investors seem to have shrugged off the negative sentiment that prevailed over the summer, but it may be too soon to draw firm conclusions. As adjustments have often occurred in waves, and as higher funding costs take typically several months to have their full impact on companies or consumers, it may well be that the recent correction is only a precursor of a more protracted downturn.

As investors have lost their bearings, volatility has increased

When the first casualties of the subprime crisis became apparent, investors went into alert mode. The uncertainty about where to locate and how to measure the risks hidden in complex instruments exposed to US subprime loans, which were held by market participants globally, made the situation even more difficult. In that environment, volatility increased.

Uncertainty about wider economic repercussion of the US subprime crisis remains

While the crisis in the US subprime market has had broader implications for the US mortgage market more generally and has spread widely across the global financial sector, the extent of the effects on the macro economy is yet unclear. Previous assertions by forecasters that the subprime crisis would not have substantial effects on the US or even the global economy have by now been mostly withdrawn, and more recent economic news points towards a more protracted economic adjustment. Most forecasters have revised their estimates downwards, and a recession in the US is now seen as more likely than before by some observers.

A liquidity crunch on money markets called central banks into action

At the height of the crises, uncertainty about losses on securities backed by sub-prime loans and a lack of proper valuation of structured products led to a liquidity crunch on money markets (see next section). As short-term liquidity started drying up, major central banks injected funds, and the Fed, at its FOMC meeting on 18 September, decided for a pre-emptive 50 basis points cut in the funds rate (the

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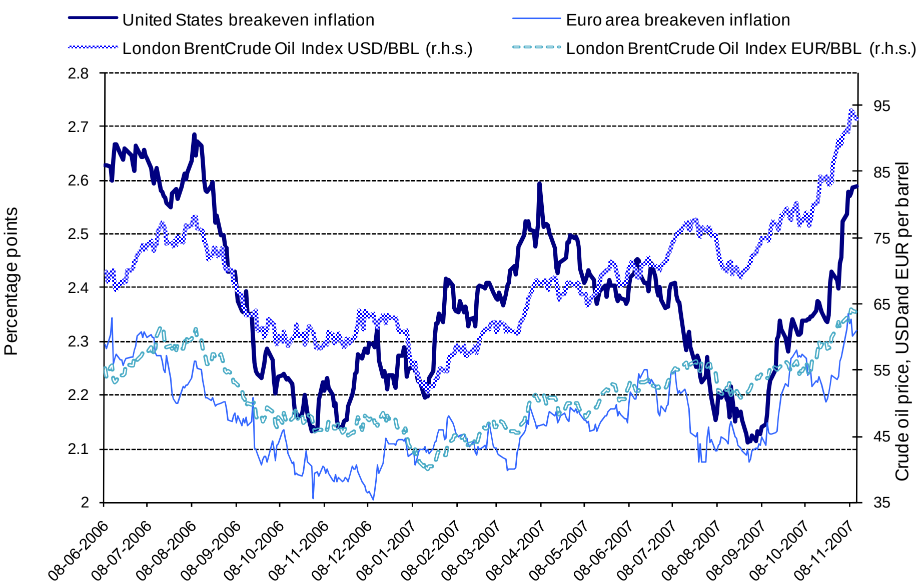
discount rate had been cut earlier to alleviate pressures in the interbank market), noting that the tightening of credit conditions had "the potential to intensify the housing correction and to restrain economic growth more generally." Another 25 basis points cut followed end of October, with warnings, however, about upward pressures on inflation by recent increases in energy and commodity prices (Figure 2).

While the Fed's action in September made equity markets soar, it sent the dollar down…

Market expectations before the September FOMC meeting were centred on a quarter basis point reduction of the federal funds rate, and when the Fed took a bolder step than expected, equity markets soared. However, not all investors viewed the cut favourably, as the subsequent slide of the dollar against major currencies may indicate. Reactions to the more recent policy rate cut showed more pessimism also on equity markets.

Figure 2. Implied inflation expectations and crude oil price



Note: Implied inflation expectations ("breakeven inflation") are differences in yields between 10-year government benchmark bonds and inflation indexed bonds (Merrill Lynch government inflation-linked bond indices).

Source: Thomson Financial Datastream.

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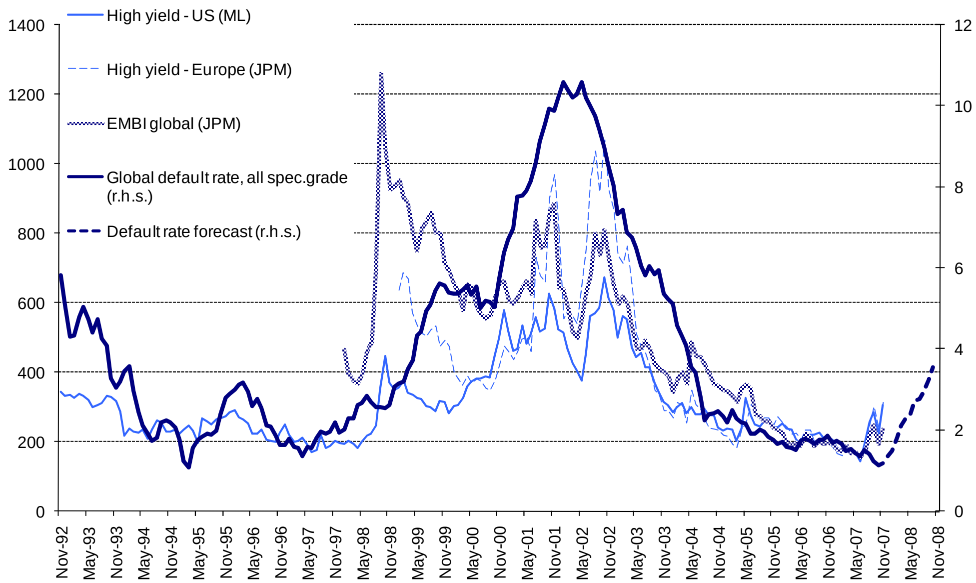
…and tightened monetary conditions elsewhere

While a weaker dollar is part of a necessary adjustment of the US current account deficit, its decline has tightened monetary conditions elsewhere and made international policy co-ordination more difficult.

Central banks may wind up between Scylla and Charybdis as the low-inflation regime may be coming to an end

At the same time, the macroeconomic environment is becoming more difficult for monetary policy. Rising oil and commodity prices are a creeping into inflation expectations (Figure 2). While the lower dollar is providing some breathing space in terms of commodity prices for the European economy, euro area actual and expected inflation is now above the ECB's two per cent reference value. As the benefits of globalisation's positive supply shock are ebbing, and demand effects from big emerging economies such as China and India are driving up prices, the so-called period of "great moderation" may be nearing an end.

Figure 3. High-yield and emerging market bond spreads *vs.* default rates



Source: Thomson Financial Datastream.

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While the corporate sector has been strong, default rates are expected to increase and risk spreads are rising

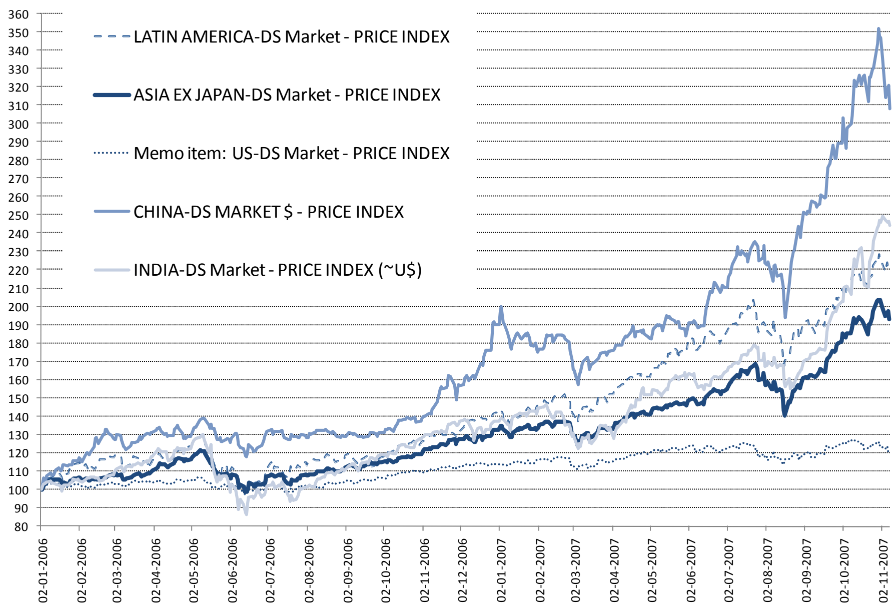
If there is a fortunate side to the story, it's that the subprime mortgage crisis has hit a time when the global economy remains in a healthy state. Non-financial corporate sector balance sheets are strong, and earnings are at high levels. But then again, above average earnings prompt observers to expect some weakening in the future, and with higher funding costs default rates are expected to increase (Figure 3). High-yield and emerging market bond spreads have risen, but are still low by historical standards.

But global liquidity is still ample, and the potential for bubbles to build up elsewhere remains…

To a large extent, the relatively low risk spreads owe to the still ample global liquidity, which has also attenuated the impact of the subprime crisis on equity markets. Increasingly, investors from emerging markets, including petro-dollar money and sovereign wealth and pension funds, are looking for higher yielding investment alternatives and are putting pressure on risk spreads. But as global liquidity continues to slosh around the world economy, the danger is that asset price bubbles may be building up elsewhere or about to burst.

Figure 4. Emerging stock markets are booming

DS Price indices, Jan-06 = 100



Source: Thomson Financial Datastream.

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…perhaps in some emerging stock markets which are booming

On the other hand, investors from developed countries are bidding up emerging market equities, in particular in the BRICS, in their search for higher returns (Figure 4). The Fed's rate cut of September has supported this trend, and some observers have drawn similarities to the Fed's emergency rate cut of 1998, which they link to the subsequent tech bubble.

Otherwise, capital flows to emerging markets seem to be based on sound fundamentals.[1] Growth prospects for Asian and Latin American economies are good, and stock valuations in terms of P/E ratios look reassuring. However, should the downturn of the US economy be stronger than expected, these markets could experience negative repercussions.

III. Implications for structured products, hedge funds and the role of rating agencies

Origins of the crisis come from the mortgage market, which has benefited from low interest rates and new mortgage products

At the heart of the recent financial market turmoil is the crisis of the US subprime mortgage market. During years of easy financing, a rising volume of loans had been extended to sub-prime borrowers, supported by various innovative, non-traditional mortgage products.[2] While these features may have enabled borrowers with poorer records to become home owners, many of them appear to have stretched their financial capacities too far. This is becoming apparent in record-high default rates in the subprime segment, in particular for the 2006 vintage of mortgages. Subprime loan origination was particularly strong in 2006, at about 20 per cent of all mortgages. Around 15 percent of all US mortgages are estimated to be in that class. Roughly a fifth of subprime mortgages are estimated to be at risk of default. Delinquency and default rates are also rising substantially for Alt-A mortgages[3] (Figure 5). In the interest only, adjustable-rate category, even prime mortgages of the 2006 vintage have become more risky.

Only about 30 per cent of all US residential mortgages are of the variable-rate type (and 25 per cent of single-family mortgages), but the share of variable-rate loans is disproportionately higher in the lower-grade mortgage

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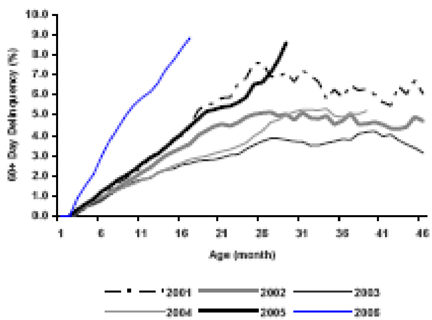
Low-grade mortgages are particularly vulnerable to interest-rate resets

segment. Furthermore, mortgage products with initial lower payments and interest-only options had become more widespread. While they were intended to make mortgages more affordable, they have made borrowers particularly vulnerable to interest rate resets. The bulk of such resets is expected to peak in the first quarter of 2008, which in turn is expected to prompt a further increase in default rates. Foreclosures, which have also risen sharply, could reach historical highs.

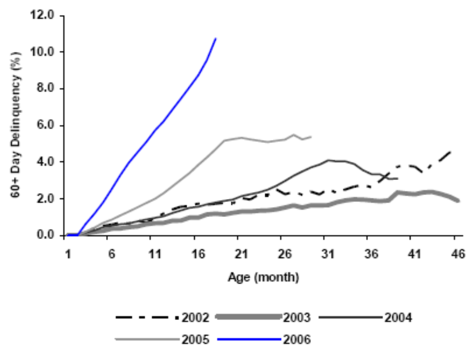
Figure 5. US mortgage borrowers in distress

60+ day mortgage delinquencies in % of current outstanding balance, by vintage year

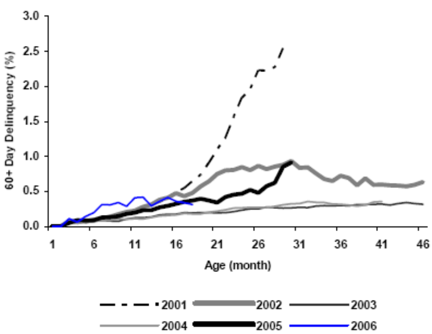
Alt-A, adjustable-rate



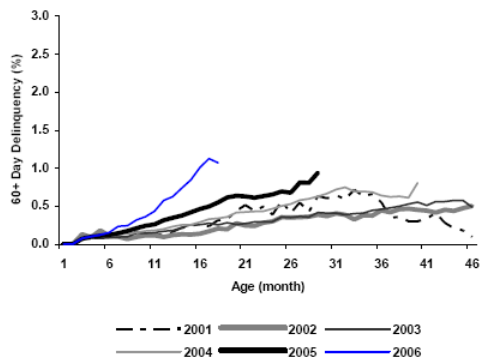
Alt-A, interest only, adjustable-rate



Prime, adjustable-rate



Prime, interest only, adjustable-rate



Note: 60+ day delinquencies include 60- and 90-day delinquencies, REOs, and defaults. (ROE: real estate owned, *i.e.* repossession of property by lender as a result of foreclosure or forfeiture).

Source: Deutsche Bank, Loan Performance, as quoted in Deutsche Bank Securities Inc., *RMBS Observer* (15 October 2007).

Falling house prices exacerbate the problem

With second-round effects from a slowing economy, the overall impact of the crisis on mortgage and other markets may be larger than expected. At the same time, falling house prices have shrunk mortgage collateral, and reduced the possibilities of borrowers to refinance their mortgages. In the past, with house prices booming, many sub-prime loans were refinanced after a short period and turned into higher-grade loans, but the chances for doing so in the current environment have diminished considerably.

Securitisation of mortgage loans has spread risks

Such a decline in mortgage credit quality in the past might have been expected to impact banks and other balance sheet lenders disproportionately. However, in the current episode, securitisation of mortgage loans has helped to spread the risks among a wider variety of investors, albeit at a cost of greater opacity as to where the risks lie in the system.

As of this past June, the volume of US asset-backed securities outstanding amounted to about USD 4.2 trillion, some 56% of which are backed by residential mortgages (RMBS). While some of these securities have been sold to direct holders, many have been sold to conduits established by the parent bank or financial institution for subsequent repackaging. Such conduits are structured investment vehicles (SIVs) and collateralised debt obligations (CDOs).[4]

Hedge funds and banks are most exposed to risks from structured mortgage-backed products, which are difficult to assess

Almost half of the estimated USD 1.3 trillion CDOs are purchased by hedge funds, about a quarter by banks, and the rest by asset managers and insurance companies, according to some estimates. Banks invest relatively heavily in mezzanine (BB to BBB) and equity tranches. The lion's share, about three quarters, of CDOs are bought in the US, and less than 20 per cent in Europe. In Asia, various reports suggest that mortgage-related exposure is concentrated in Japan, Australia, Chinese Taipei and Korea, but seems to be smaller overall and more manageable than in other regions.

CDOs are heavily dependent on highly-leveraged loans to make the economics of the structure work. In the end, even the prime-rated tranches are based on lower-grade paper. Thus, even the senior tranches contain a risk element which is hard to assess and likely to be underrated. To

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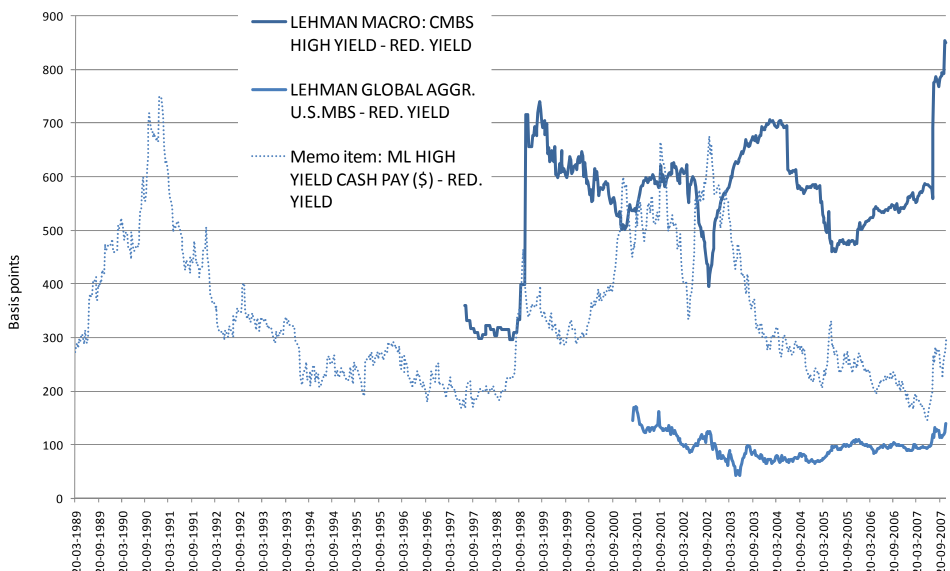
compensate for the inherent risk, the senior tranches are often sold with credit enhancement through insurance guarantees. Another risk which is more difficult to assess is the warehousing risk for the structuring entities, which is always present but becomes readily apparent when financing is scarce or the end-products are difficult to sell.

Mortgage lenders closed their business, and MBS holders suffered, in particular hedge funds which were exposed to the high risk segments…

The crisis in the subprime sector forced the closure of many mortgage brokers and under-capitalised lenders earlier this year, while second round effects are still working their way through the financial system. While some of the exposure of banks and hedge funds to the sector had already become apparent in February and March, the situation worsened in June, when a few major hedge funds that were heavily exposed to subprime-backed securities defaulted. While one of them was eventually bailed out by the parent investment bank (Bear Stearns), the failure provided additional evidence that the crisis was not confined to primary originators.

Figure 6. Mortgage security spreads



Note: Yield spreads over US investment grade bond index yields, and over 10-year US benchmark bond yields for global US MBS.

Source: Thomson Financial Datastream.

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…but also banks were affected, and MBS spreads skyrocketed

In July, Germany's IKB suffered losses from exposure to US subprime loans, and had to be rescued by a fund put together by its major shareholder (KfW) and other public and private sector banks. In the wake of this event and news of similar problems elsewhere, there was a major correction in the market for mortgage-backed securities. MBS spreads, in particular in the high-yield segment, began to rise to unprecedented levels early in August (Figure 6). At that time, a major French bank (BNP Paribas) suspended withdrawals from three of its funds which were exposed to US subprime loans, citing the inability to value them in the prevailing uncertain market environment. Northern Rock, a British Bank, which had some exposure to subprime loans, though not heavy, nonetheless fell victim to a bank-run in September, as depositors lost confidence in the security of their funds when it became clear that the Bank of England had provided emergency funding to the bank. Since end of September, major global banks have been reporting losses from their subprime-backed trading business and related security business (including warehousing losses).

Such problems in the banking sector, the extent of which is still unfathomable, have affected their share prices more widely; the sector's overall indices lost against broad market indices in almost all OECD countries over the past few months (Figure 7).

Rating agencies had not grasped the extent of the risk

One of the surprising elements of the crisis for many market observers was that rating agencies, which had previously assessed many of the mortgage-backed structured products, had not grasped the extent of the risk hidden in the holders' exposure to mortgage markets. In June and July hundreds of securities backed by subprime loans were downgraded or placed on review for downgrade. Most of the securities, MBS and related CDOs, were downgraded by three to four notches. Such actions were unexpected and exposed rating agencies to considerable criticism, if not to more serious charges. The uncertainty about credit quality continued after the major downgrades, and rating agencies admitted their lack of appropriate models to assess the effects of the turmoil in the housing market on ratings of the remaining securities.

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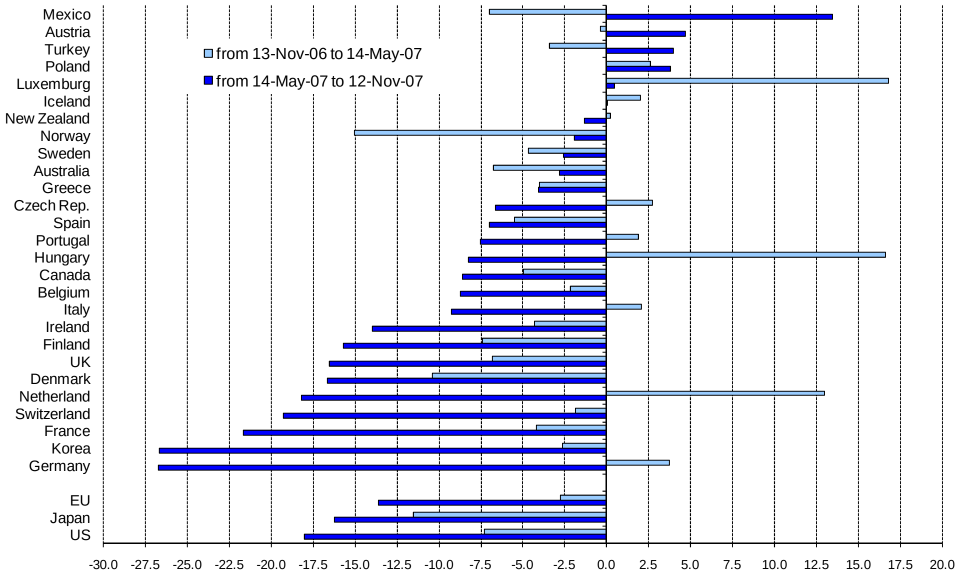
Figure 7. Banking sector performance worsened

Per cent changes in banking sector index relative to total market



Note: Calculations based on Datastream banking sector and total market indices for each economy, except for Iceland (ICEX Financials and ICEX All, respectively) and New Zealand (Financials instead of banks).

Source: Thomson Financial Datastream.

In the uncertain environment, the demand for liquidity surged, which led to a credit crunch in the money market…

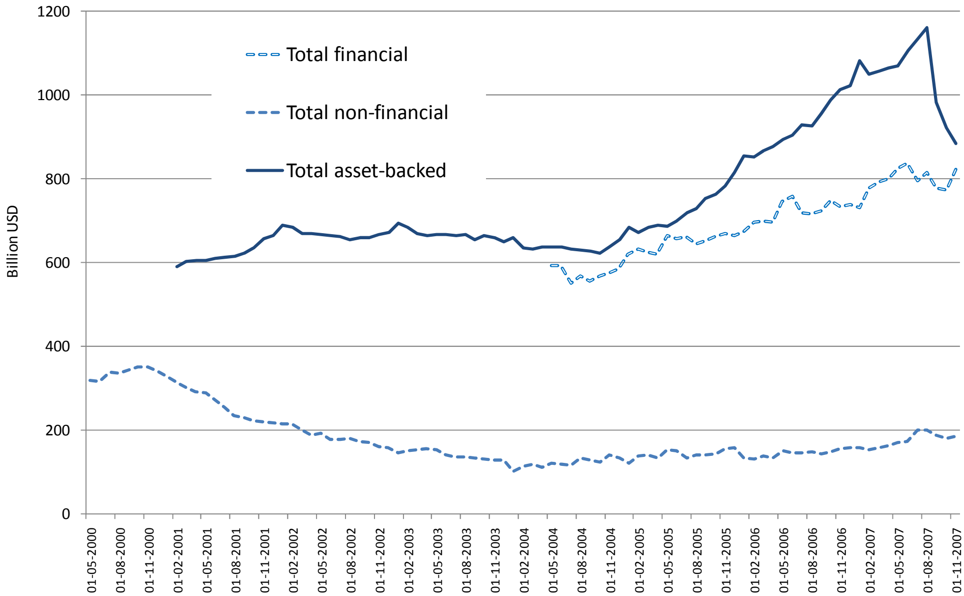
In July, after the exposure of various banks to bad US subprime loans had become apparent, the interbank money market dried up and related interest rates reached record levels in August. Despite ample global liquidity (as discussed above), liquidity froze on the money market – the "liquidity puzzle" of the credit crunch, as some observers noted. Major central banks stepped in to provide short-term liquidity to alleviate these conditions.

…associated with a drying up of the market for asset-backed commercial paper

A major contributing factor was the fact that many conduits in the CDO and related structured product markets had funded their investment in longer-term, higher-yielding assets via asset-backed commercial paper (ABCP). In fact, ABCP has accounted for most of the growth in commercial paper markets in recent years. But in August the market shrunk substantially, as many money market funds and other investors pulled out of that market in favour of more secure assets (Figure 8). As in other crises, the flight to quality resulted in many funds being parked in short-term Treasury bills.

Figure 8. Sharp decline in US asset-backed commercial paper

30-day Commercial Paper outstanding, billions of dollars, seasonally adjusted



Source: Thomson Financial Datastream.

Banks are rolling back conduits onto their balance sheets

With the conduits unable to fund their holdings of assets, sponsoring banks saw an increased likelihood that they would be forced to take risky assets back onto their balance sheets, and began to hoard liquid funds, which put further pressure on money markets. As Fed data show, in mid-August US Banks were holding reserves at an average amount more than 23 per cent in excess of required reserves, a record high from the 3-5 per cent average in normal times. The strong demand for liquidity may have also led to some fire sales of assets, depressing their price and causing insolvencies of otherwise solvent institutions.

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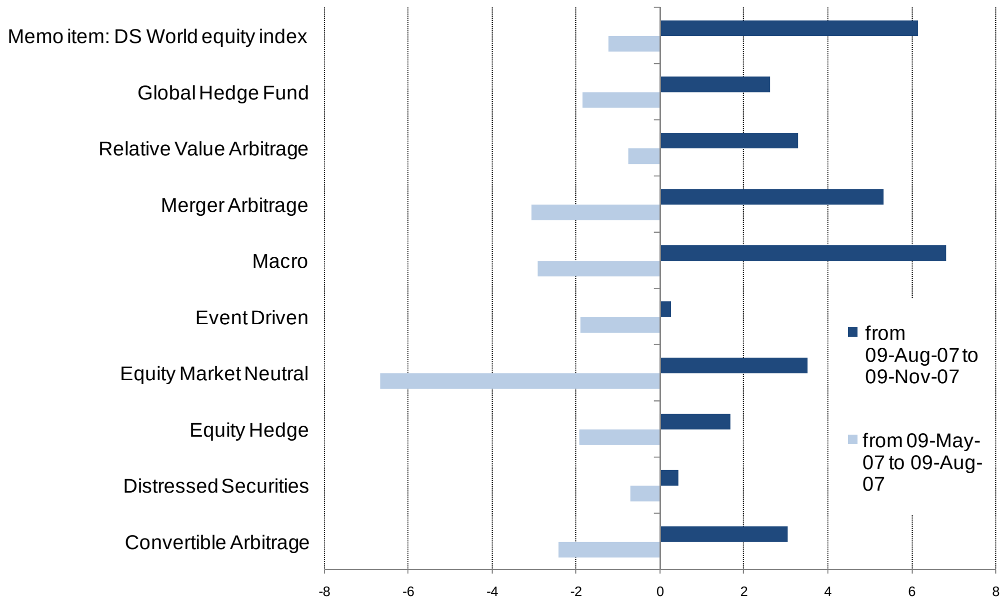
Hedge funds also appear to have suffered during the recent turmoil

Among alternative investment vehicles, hedge funds also appear in many cases to have suffered from the recent turmoil, with funds based on equity-market neutral strategies faring the worst (Figure 9). However, more recently most of these losses have been compensated and hedge fund performance overall has increased, with macro and equity market neutral strategies being the most successful.

Figure 9. Hedge fund performance by strategy

Per cent changes of daily Hedge Fund Research (HFRX) indices



Source: Thomson Financial Datastream.

Market solutions to provide liquidity

Moreover, many hedge funds have actually been providing liquidity to the market when it was needed most, by buying up distressed debt they believe may have depreciated too sharply during the recent downturn. In some cases, investment banks are said to be offering attractive financing terms for “vulture funds” (run by hedge funds and private equity) to buy the banks’ own debt. In

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order to deal with such problems, major investment banks have also been considering creating a "super SIV" in order to allow for a smooth adjustment and sell-off process of bad debt contained in others SIVs and CDOs.[5]

Notes

1. See also the article on Indian financial markets in this issue: Sebastian Schich, "Indian Financial System Reform: Selected Issues", *Financial Market Trends* vol. 2007/2 (no.93).
2. Such products include hybrid mortgages and mortgages with non-standard amortisation schedules, which are mainly interest-only mortgages, option ARMs, and mortgages with 40 or 50 year amortisation schedules.
3. Alt-A mortgages are more highly rated than subprime mortgages, but lower than prime credit due to non-standard features with regard to the borrower, collateral or loan.
4. For a more detailed discussion of these problems see the following article in this issue: Adrian Blundell-Wignall, "Financial Market Implications of Recent Structured Product Problems", *Financial Market Trends* vol. 2007/2 (no.93).
5. See the following article in this issue, A. Blundell-Wignall, *op.cit.*

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