УДК 336

FINANCIAL MARKET TURBULENCES – SOME REMARKS

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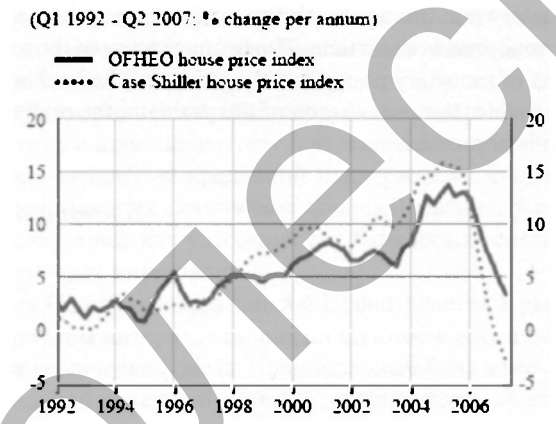
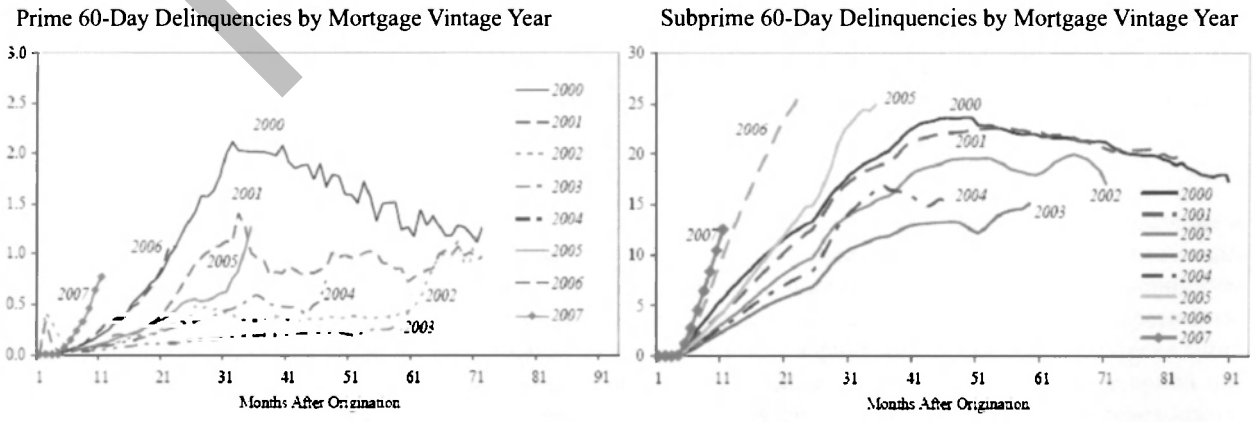
1 FROM HOUSE PRICES TO THE CRISIS ON THE MARKETS FOR ASSET BACKED SECURITIES

Accompanied by a period of very low interest rates where the federal funds rate was in a margin between 1 % and 2 % from 2001 until 2004, the housing market in the United States boosted. House prices in several regions sometimes doubled within a few years. The low interest rates made it more and more attractive for home owners to finance their properties by mortgages. High risky loans seemed to be good investments for the banking sector: Even if the loan volume was at 100 percent of the real estate that served as collateral, the permanently rising house prices increased the value of the collateral and reduced the risk over time. Furthermore, financial innovations made the mortgage business more attractive because banks were able to outsource risks to the markets. In a nutshell: The transferred risks were no longer a burden for the balance sheets of the banks. In this situation the rising interest rates and a decline in US house prices during 2007 (see chart 1) led to a rapid growth of defaults on the US mortgage market.



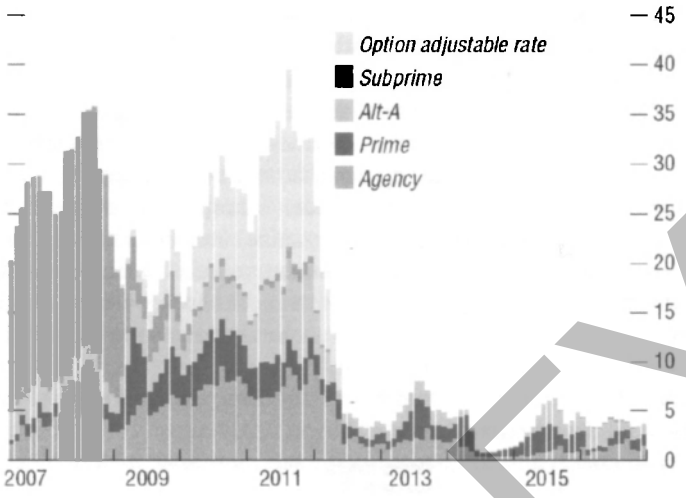
Source: ECB, 2007 [5, P.25]
Chart 1. US House Price Inflation

Especially mortgage loans with lower quality standards (the subprime mortgage market segment) were affected by this development. But even the default rates of high quality mortgages increased significantly (see chart 2).



Source: IMF, 2008 [10, P. 4]
Chart 2. Loan Delinquencies of Prime and Subprime Mortgages

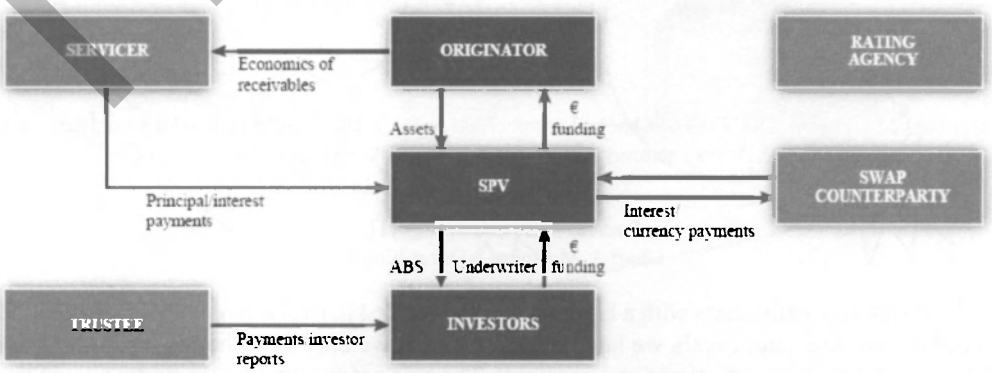
The above chart shows the delinquency rates (repayment problems, lasting more than 60 days) occurring up to 91 months after the origination of the loans. Sharp increases can be observed during 2006 and 2007 and there are strong concerns that this development will even increase in the near future. The reasons for these concerns are due to the structure of the US mortgage market where loans are very often granted with an adjustable interest rate. New adjustments in the near future will lead to much higher interest rate burdens for the borrowers and most probably to rising delinquencies (see chart 3).



Source: IMF, 2007, [9, P. 8]
Chart 3. Monthly Mortgage Rates Resets (First resets in billions of U.S. dollars)

Nevertheless, the reason why this development is able to disrupt the financial system in the United States and worldwide, seem to follow a more complex plot where several types of structured securities are the main factors (for a chronological overview of the events see, [8, P. 4]).

Since the second half of the twentieth century the US mortgage market has been strongly characterised by the securitization of mortgages. The basic idea is to pool similar mortgages and sell securities that have claims on the mortgage payments from the pool which are passed through directly to the security holders. For this reason a special purposes vehicle (SPV) buys loans and mortgages and issues medium to long-term securities (ABS = Asset Backed Securities / MBS = Mortgage Backed Securities), collateralized by mortgages. These securities are purchased by other banks, hedge funds, institutional investors, individuals and also by the depository institutions themselves. Due to the securitization process, the mortgage originators are able to remove credit, market and liquidity risks from their balance sheets in that these risks are shifted to the investors – at least to a certain degree. Nevertheless they are able to earn a fee income from their originating activities, because the majority of the issued securities has – due to portfolio effects, subordination and other credit enhancement techniques – a much better rating than the average loan in the pool. Further profits were offered by the idea to use the spread between long- and short-term interest rates by issuing short term securities based on long-term properties (ABCP Asset Backed Commercial Papers).

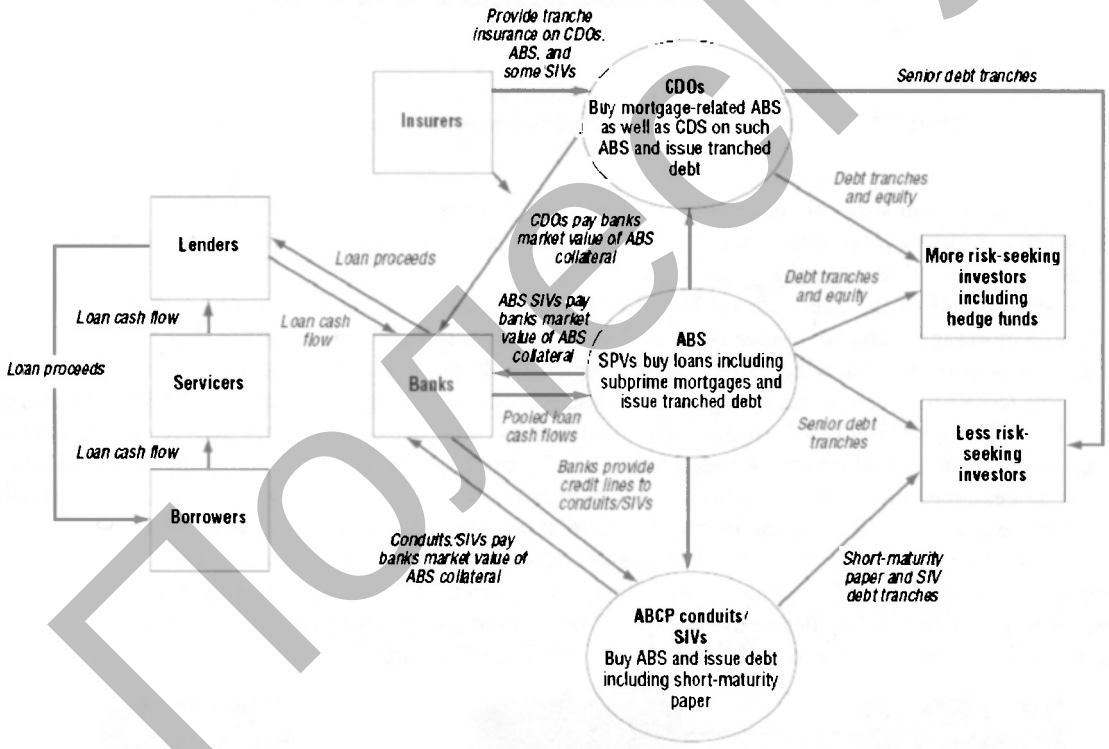


Source: ECB, 2008, [7, P. 82]
Chart 4. Transaction Participants and Functions in the Creation of an ABS

Because of the liquidity of these securities, the US mortgage market gained access to a large capital source for financing additional loans. The increase in the overall mortgage volume triggered very often a laxer handling of credit standards. The whole process resulted in a substantial increase in high-risk subprime mortgages. Nevertheless many of the subprime mortgage loans seemed to be much too risky to collateralize and sell them to the broad public.

«The key to moving sub-prime mortgage debt through the market was to divide up the risk, creating low-risk investment grade segments and higher-risk (lower rated) segments from the pool of mortgages» [4, P. 17]. Together with other credit enhancement techniques (e.g. credit default swaps, liquidity facilities) the system of subordination made even high risky credits tradable. The exact subordination differs and the mechanisms are getting more and more complex over time, but the main idea looks as follows: A part of an asset portfolio is pooled and used as a collateral for issuing securities (ABS, MBS and CDOs – Collateralized debt obligations), where the securitized claims on the pool's payments are carved into different tranches. The securities have a claim on principal and interest, where the least risky, senior tranches have the first claim on the payments from the underlying mortgages. These tranches usually have a high credit ranking (sometimes as high as AAA) and receive a relatively low interest rate payment. After these tranches are paid (at least to a special degree), the middle (mezzanine) tranches receive its payments which are usually higher than the ones of the senior tranches. The mezzanine tranches represent a higher risk level and usually receive a credit ranking that is below-investment-grade. Only after these tranches are repaid fully or at least to a special degree, the equity tranche receives payments. Therefore the equity tranche represents the highest risk, and is usually unrated. This high risk is connected with the highest rate of return [4, P. 15–17].

The next chart gives a broad illustration of the complex securitization structure where the main instruments which were causing the turbulences of the financial markets are shown.



Note: ABS = asset-backed security; ABCP = asset-backed commercial paper; CDO = collateralized debt obligation; CDS = credit default swap; SIV = structured investment vehicle; SPV = special purpose vehicle.

Source: IMF, 2007 [9, P. 11]
Chart 5. Mortgage Market Flows

The story behind CDOs usually starts with a high risky, undiversified portfolio (e.g. locally concentrated subprime mortgages) owned by the originator (again we have to mention, that we only describe the main idea behind the construction of CDOs, in reality the mechanisms are manifold). The originator separates the portfolio and the risk of one portion of the portfolio (the so-called unfunded portion) is directly transferred via a credit default swap (CDS) to a super-senior counterparty. This super-senior counterparty (usually a highly rated bank or insurance company) acts as a protection seller. For typically at least 80 % of the underlying portfolio it commits to pay a compensation for defaults to the originator which in return pays a premium to the counterparty. This risk for the super-senior counterparty was

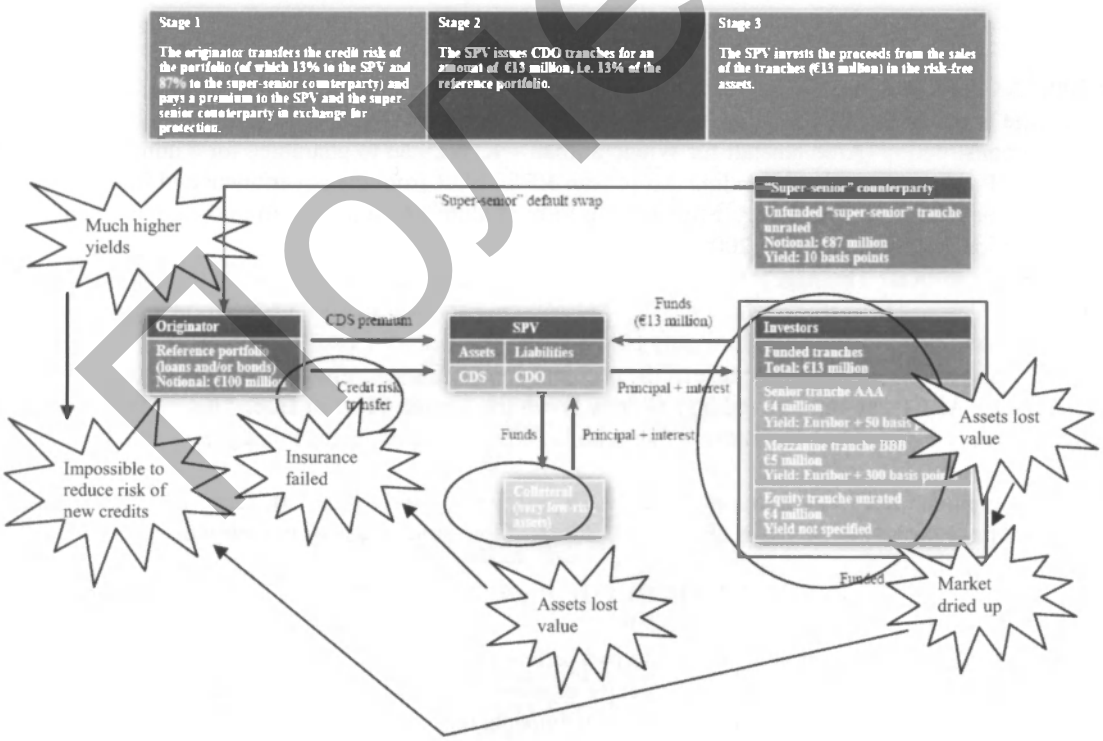
usually seen as very small because (in the 80 % example) at least 20 % of the credit portfolio has to default before the originator could draw on its insurance. That's why the premium for such insurances is very low. The rest of the portfolio (the funded part) is much riskier and therefore the originator uses other mechanisms to protect himself against the risk. He transfers the claims on principal and interests to a SPV and in return he receives claims on interest and payments from a much lower risky and more diversified portfolio. How can this happen? The SPV uses the claims on interest and payments of the risky portfolio to issue different tranches of CDOs, which receive these rights. The tranches are sold to investors, which use them in a diversified portfolio and therefore don't face the original concentration risk. For these investors the CDOs serve a similar function like other ABS: They have a claim on interest and payments of an underlying credit portfolio. The SPV now uses the money from the placement of the CDOs to buy other assets (usually other ABS or CDOs) and as a result they build a more diversified, less risky collateral portfolio. The interest and principal payments are then passed to the originator who receives a much more protected cash flow than it was the case in his original undiversified portfolio.

On the other hand it becomes clear why especially the CDOs market was hit by the crunch in the mortgage market to such a heavy extent. What happened? Because of the downgrades of the CDOs the market for these assets dried up and the originators weren't able to secure their loan portfolios like they have done before. The payments from the SPV to the originator were sharply reduced, because the portfolios of the CDOs mainly consisted of other CDOs and ABS. Furthermore the payments to the super-senior counterparties became much more expensive which made it even more difficult to protect a loan portfolio.

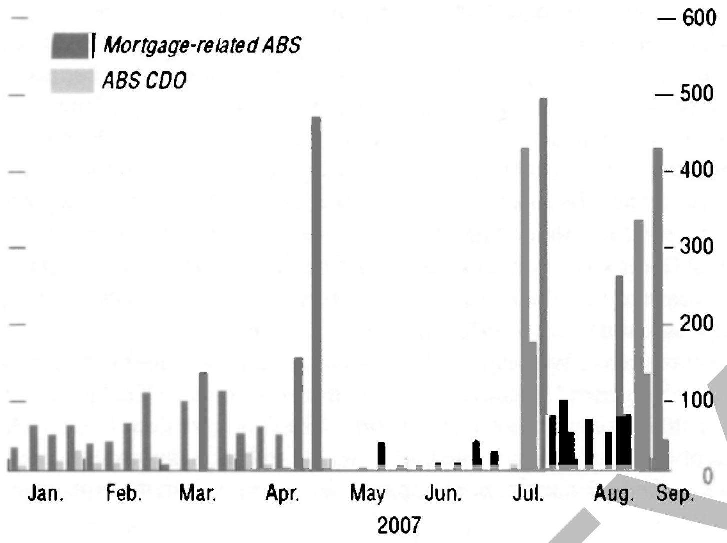
Unlike publicly traded securities a number of these securities and credit derivates are traded on over-the-counter (OTC) markets. Usually the originators are selling the securities in a intransparent way to institutional investors and hedge funds, which are capable to take these high risk investments. For this reason there is no market to determine prices for these assets and the lack of public markets means, that there is no institutional setting to ensure liquidity for the assets.

It was into this increasingly complex and intransparent framework that the crunch in August 2007 hit the market for subprime asset backed securities.

A broad re-evaluation of mortgage-related products by rating agencies triggered a wave of downgrades in mid-2007. The majority of mortgage-related ABS as well as CDOs were downgraded three to four notches (rating grades), some even more. These downgrades where followed by a sharp decline in the value of these assets.



Source: ECB, 2008 [7, P. 84], comments by the authors
Chart 6. Exemplary Structure of a CDO and Market Failures



Source: IMF, 2007 [9, P. 8]
Chart 7. Number of Downgrades of Mortgage-Related Products

Highly leveraged investors who used these assets, especially hedge funds, needed to adjust positions or trade out of losing positions and the market became suddenly illiquid [4, P. 19]. Surprised by sharp decrease of the value of all kinds of mortgage-related products which followed, also institutional investors and issuers of CDOs stopped buying these assets. As a result the demand for the assets which were used in CDOs, especially ABS and ABCP, decreased further making these market segments illiquid too. The following picture illustrates how the turbulences on the mortgage markets caused a number of serious problems, for investors as well as for the issuers of theses assets.

2. THE CRISIS IN GERMANY – THE EXAMPLE OF THE IKB

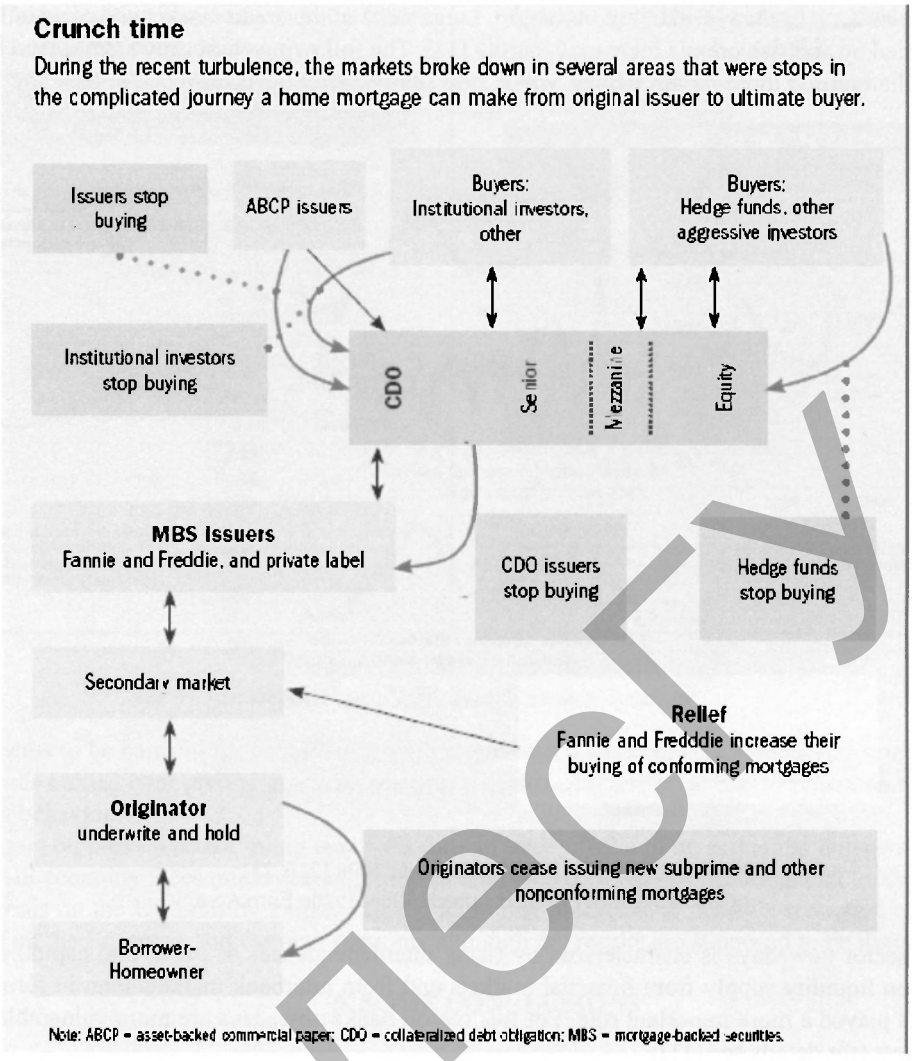
On July 30th, 2007, the German middle size bank IKB (*I*ndustrie*k*redit*b*ank) shocked the market with the announcement of large financial losses due to problems on the US subprime market. Their main shareholder, the state owned Bank for Reconstruction (Kreditanstalt fur Wiederaufbau – KfW), had to guarantee for a number of liquidity facilities for the ABCP vehicle Rhineland Funding. More than 3.5 bn EUR from the government and from other banks were needed to save the IKB from bankruptcy. More help in form of almost 6.5 bn EUR from the government and the Bank for Reconstruction followed in spring 2008.

What had happened to IKB? The ABCP vehicle Rhineland Funding bought large amounts of long term loans including subprime mortgages. These assets where refinanced by issuing short-term asset backed commercial papers. To ensure that the Rhineland Fund with a capital of only 500 US-$ was able to pay back the outstanding debts, the IKB guaranteed liquidity lines of 8.1 bn EUR. Because of the problems on the US subprime market, the Rhineland Funding wasn't able to sell their ABCPs any more, and had to draw down the liquidity line of IKB. This in turn overstrained IKB with a capital of only 1.4 bn EUR and led together with liquidity squeezes on the money market to the described rescue operation.

A number of state-owned banks in Germany, namely the Sachsen LB and West LB, faced more or less similar problems. These events led to rising concerns about the stability of the banking sector in Germany.

3. THE CRISIS IN THE BANKING SECTOR

The crisis of the banking sector can be divided into two different stages: In the first few months of the crisis, the aspect of liquidity in the banking sector was in the centre of attention. Nowadays the discussion about decreasing profits and increasing losses in the banking sector and their impacts on the real sector of the economy, come to the fore [15, P. 10].



Source: [4, P. 18]
Chart 8. Mortgage Market Failures

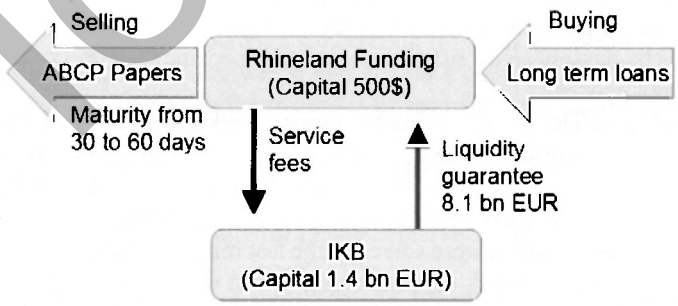
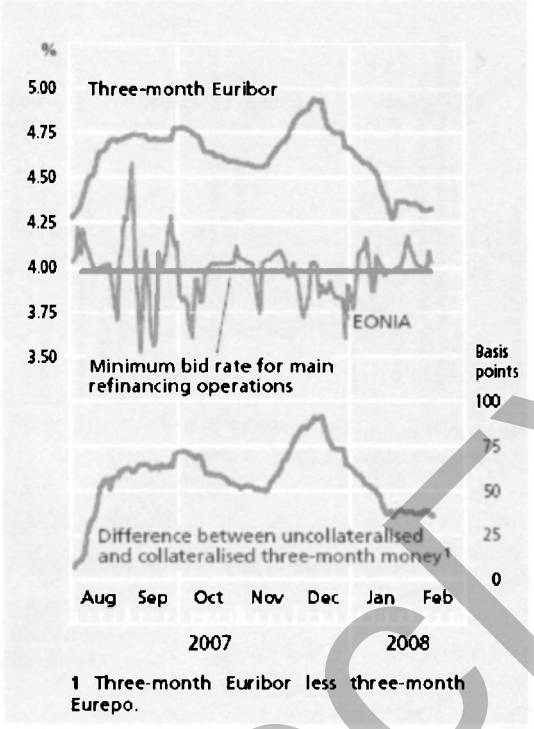


Chart 9. Problems of the IKB

Due to the growing risk of mortgage-related products, it was increasingly difficult to find investors for those ABS and CDOs. Therefore the sponsors draw the liquidity lines for their asset-backed-commercial-paper-programs and force banks to buy those products. For some banks these liquidity outflows were too high, and as a result, they faced serious solvency problems. The intransparency of the OTC market aggravated the problem, because investors did not know who was – and was not – exposed to the subprime risk [4, P. 19]. Suddenly the risk of default was a serious problem even with former highly rated banks being the counterparty. The actors on financial markets reacted with a high level of risk aversion, which hit especially the interbank market for unsecured short-term loans. The reaction of banks was to either reduce or cancel credit lines for other banks as soon as possible. In the light of uncertainty connected with the solvency of other banks it seemed appropriate to hold liquidity in cash rather than taking high risks

on interbank markets for a limited level of credit margin. Large parts of the credit market and especially the interbank lending market dried up and risk premia increased sharply [13]. The following chart shows the spread between uncollateralized and collateralised three-month money, which rose sharply after the occurrence of the subprime crisis.



Source: Deutsche Bundesbank, 2008 [2, P. 23]
Chart 10: Money Market Interest Rates in the Euro Area

The banking sector nowadays is characterized by rising interdependences of banks and capital markets. Banks rely much more on liquidity supply from financial markets and from interbank markets than in former times when customer deposits played a more important role. For this reason banks nowadays are more vulnerable to disruptions on financial markets (for details see [11]).

As to mortgage-related products banks faced increasing liquidity needs due to commitments arising from the relationship entered into with the issuers of the ABS/MBS/CDOs-programs and at the same time the possibilities for short-term refinancing over the interbank market decreased sharply. The result was a dramatic liquidity problem for a number of banks worldwide. Further troubles for banks came up with the marking-to-market of mortgage related product portfolios, which resulted in severe write-off-losses on their balance sheets. Now the dark side of bank's strategies to reduce capital requirements by passing credit risks to other parties became visible: The capital buffer to compensate unforeseen risks was almost not existent.

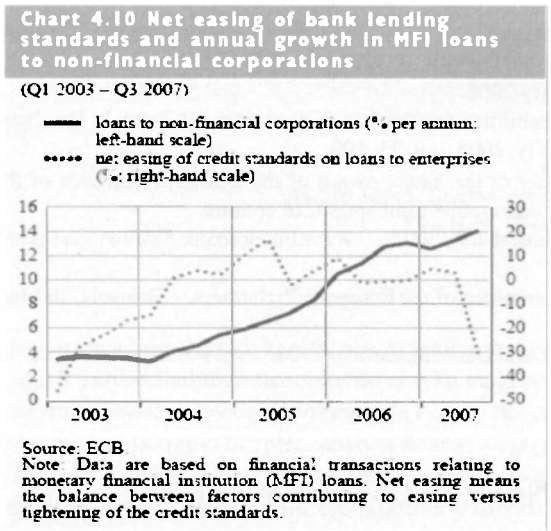
In this situation central banks reacted by supplying the money market with a high level of liquidity (for an overview of central bank actions worldwide see [1], the reaction of the European Central Bank is described in [6, 12]). This led to an easing of tension on the money market. The volatility and the spreads between uncollateralized and collateralised loans started to tend to a more normal level at the beginning of 2008.

But as the example of Bear Stearns, which were solved in the last minute with a takeover by J. P. Morgan in March 2008, shows that it might be too early to speak of a normalization of the situation. In any case, the second stage of problems in the banking sector, decreasing profits and rising losses, is still ongoing. Until conditions in the US housing market show signs of improvement, the possibility of continuing tensions in structured credit markets cannot be excluded [15]. Further problems might result from the so-called monoliners, which issue insurance contracts (credit default swaps CDS) to institutional investors in form of guarantees for the timely repayment of bond principal and interest when an issuer defaults.

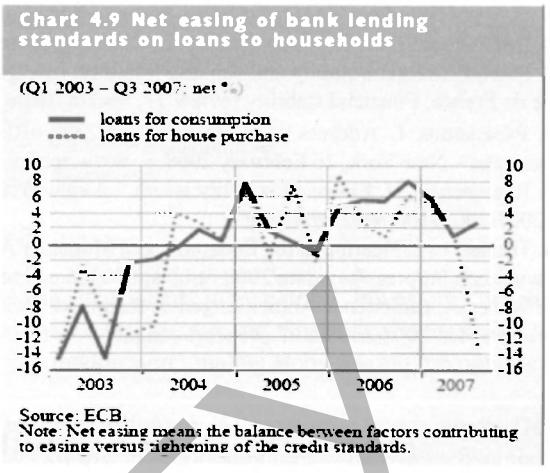
4. IMPACT ON THE REAL SECTOR

A direct impact of the financial market crisis on the real sector might occur in form of rising refinancing costs for companies, which might be reflected in a lower level of investments [16]. Recent data show that banks indeed raise their lending standards, but currently without strong impacts on the lending volume.

Net easing of bank lending standards on loans to non financial corporations



Net easing of bank lending standards on loans to households



Source: ECB 2007a, [5, P. 107-110]
Chart 11: Loan Volumes and Lending Standards

But what seems to be harmful for economic growth might be the beginning of a necessary readjustment process. Lending standards eroded over several years, at least from 2004 to 2007, what seems to reflect an inefficient level of high risk taking behaviour.

Indirect impact on the real sector might occur via foreign trade effects of an economic downward slop of the US economy. The US economy faces much deeper problems than the rest of the world: Financial losses of US banks are huge and the crisis on the US housing market creates additional problems. A possible reduction of US growth will have an impact on the European and German economy although the results are supposed to be limited [16, P. 11].

5. SOME CONCLUSIONS

The recent experience with the subprime crisis and its impact on the banking system as well as financial markets suggests a number of broad conclusions:

1. The information value of credit rankings made by rating agencies is limited. They cannot constitute a full substitute for a careful own risk analysis [16, P. 14]. In addition the adequacy of the valuation methods of rating agencies is put into doubt. Without adequate improvements public policy action would need to be considered [15].

2. For a discussion about the system of banking supervision it is still too early. We should wait for the full and worldwide introduction of the Basel II accord, which will lead to a number of improvements [16, P. 14]. Especially the capital adequacy framework in relation to the treatment of securitisation and off-balance sheet exposures will be improved.

3. Many market participants underestimated the interdependencies between different market segments (e.g. money, mortgage, bond markets), as well as the interplay between the real economy (house price crisis) and the financial markets. Furthermore the importance of liquidity for financial markets and the banking system was highly underestimated by the market participants [3, P. 86].

4. The president of the ECB also suggests a significant change of culture. More transparency is needed to avoid contagionand herd-behaviour in finacial markets and the banking sector and, therefore, the propagation of turbulences in times of difficulty [15].

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Summary

The paper gives a brief overview of the recent financial market turbulences, which started in August 2007, and their impact on the financial markets within the Euro area. It tries to highlight some reasons for the turbulences on financial markets which seem to challenge the banking sector so much. Having started at the US housing market, the crisis proceeded over the mortgage market to the market for asset backed securities and from thereon caused troubles on the interbank lending market. The following problems for the banking sector might also have an impact on the real sector of the economy. After the analysis of the causes of the crisis, the paper tries to highlight some broad conclusions about possible lessons for the future.

Поступила в редакцию 5 марта 2008 г.