Securitization

A critical assessment in the light of the financial crisis

A dissertation work under the supervision of

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List of abbreviations

ABCP	Asset Backed Commercial Paper Programmes
ABS	Asset Backed Securities
AMA	Advanced Measurement Approach
BaFin	Bundesanstalt für Finanzdienstleistungsaufsicht
Basel II	International Convergence of Capital Measurement and Capital Standards: A Revised Framework
BCBS	Basel Committee of Banking Supervision
BIS	Bank for International Settlements
CCF	Credit Conversion Factor
CDO	Collateralized Debt Obligation
CDS	Credit Default Swap
CDX	Credit Derivatives Index
CEM	Current Exposure Method
CEO	Chief Executive Officer
CESR	Committee of European Securities Regulators
CLN	Credit Linked Note
CMBS	Commercial Mortgage Backed Securities
CPDO	Constant Proportion Debt Obligation
CRA	Credit Rating Agency
CRT	Credit Risk Transfer
ECAI	External Credit Assessment Institutions
ECB	European Central Bank
EC	European Commission
ECF	Expected Cash Flow
ED	Exposure Draft
EIR	Effective Interest Rate
EU	European Union
FASB	Financial Accounting Standards Board
FBE	European Banking Federation
FED	Federal Reserve System
FLP	First Loss Piece
FSA	Financial Services Authority
FV	Fair Value
FVTOCI	Fair Value through Other Comprehensive Income
FVTPL	Fair Value through Profit and Loss
GFSR	Global Financial Stability Report
GSE	Government Sponsored Entities
IAA	Internal Assessment Approach
IAS	International Accounting Standard
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standard
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
IRC	Incremental Risk Charge

ISDA	International Swaps and Derivatives Association
iTRAXX	Credit Derivatives Index
KWG	Kreditwesengesetz (German Banking Law)
LGD	Loss Given Default
LTV	Loan to Value
NRSRO	Nationally Recognized Statistical Rating Agency
OCI	Other Comprehensive Income
PCA	Prompt Corrective Action
PD	Probability of Default
PPS	Principal Protected Swap
RoA	Return on Assets
RoE	Return on Equity
RMBS	Residential Mortgage Backed Securities
SEC	Securities and Exchange Commission
SF	Structured Finance
SIV	Structured Investment Vehicle
SPE	Special Purpose Entity
SPV	Special Purpose Vehicle
SRP	Supervisory Review Process
TRS	Total Return Swap

Abstract

My dissertation thesis provides a comprehensive analysis of the principles of securitization techniques, of their attendant shortcomings, their regulatory treatment and the recent proposals for reducing complexity in accounting standards with relevance for securitizations.

The explosion of securitization and related innovative credit risk transfer products largely expanded the magnitude and diversity of issuers, investors and securities. With this expansion numerous market participants began to wrongly believe that risk was not only shared more widely, but also that it disappeared from the system altogether.

The application, or to be more precise, the misapplication of securitization in the mortgage market had fatal consequences for the financial sector worldwide. Before securitization, sub-prime mortgage lenders retained the loans that they originated on their balance sheets and therefore cared about their credit quality. Securitization techniques and related innovative financial instruments enabled the export of sub-prime mortgage structural problems from the United States globe-wide via the financial intermediaries.

More over, securitization techniques and related credit risk transfer products enabled single banks to reduce their individual risk while at the same time transferred new and greater risks to the financial system.

Meanwhile a lot was written on the causes for the recent financial crisis. In most cases inadequate ratings provided by the credit rating agencies and different principal agent problems were addressed. I present both for completeness in my work.

However, I argue that not only the credit rating agencies are to blame for the inadequate reflection of securitization and related financial innovations and subsequently for the financial turmoil. The international and national financial supervisors in fact supported the credit rating agencies to further establish their businesses.

What turned obvious during and after the financial turmoil started mid-2007 is that financial regulation failed to reach its main goal - ensuring stability of the financial system. It failed despite of the “regulatory achievements within Basel II” elaborated over the past ten years.

In particular, securitization and related credit risk transfer products were not adequately treated in Basel II. Securitization-related products such as Credit Derivatives on Securitization Underlyings and numerous other complex financial innovations, as presented in my thesis, were not even thought of in Basel II.

In fact, Basel II turned to do little to make the financial system more resilient. The need for further revisions in banking regulation is currently more than obvious.

Furthermore, it is time to ask if the developments in Basel II are the right way to address the current risks within the financial system and hence if Basel II is the right way of banking regulation and supervision altogether.

With the development of both Basel Accords (Basel I and Basel II) capital ratios became the center of banking regulation. However, capital ratios are obviously not sufficient as a measure for a systemic financial stability.

These questions arise at least when financial stability and soundness are still the intended objectives and believed to be ensured through Basel II.

My merits in this dissertation work root in the multi-facet analysis of securitization techniques that I provide. Up to date a comparable analysis of securitization techniques which addresses the wide spectrum of securitizations' issues - such as (i) their treatment and the related attendant flaws within the regulatory framework Basel II, (ii) the various microeconomic deficiencies related to securitizations, and (iii) the implicit macroeconomic threads of exporting credit risk and de-balancing financial stability through securitization techniques - has not been provided in the comprehensive way I built up my analysis.

As a basis for my analysis, I provide a new classification of the characteristics of securitization techniques which were pre-crisis wrongly perceived as benefits.

I analyze the reasons for the turmoil in the financial markets in their interplay and complexity and consider securitization techniques as a key driver for the financial crisis.

I comprehensively criticize the current regulatory treatment.

I present in detail why the recent financial crisis should be considered a clear regulatory failure due to the up to date short-sightedness of financial regulation.

Through providing partial solutions and professional author's assessment of selected regulatory and accounting changes to securitizations I deliver an expert's contribution to the topic.

My conclusions are that securitization markets, as they have been operating until today, brought a negative net macroeconomic effect which has been largely damaging to the global economy.

I argue that international and national financial supervisors established an inadequate framework for financial regulation and supervision, and among other failures, even supported credit rating agencies to further establish their businesses.

Further on, I show that early warning indicators of systemic risk in the financial sector and signs of the coming turmoil were irresponsibly ignored at the time they were perceived.

What turned obvious during and after the recent financial turmoil is that capital regulation failed to reach its main goal – ensuring stability of the financial system. In particular, securitization and related credit risk transfer products were adequately treated neither in Basel I nor in Basel II.

Finally, I conclude that capital ratios as established with the development of both Basel Accords are not sufficient as a central measure for banking regulation and ensuring systemic financial stability.

1 Introduction

Many researchers and economists insisted in recent years on the view that sub-prime mortgages are welfare improving. I present as an introductory example an abstract of a speech of Federal Reserve Ex-Chairman Alan Greenspan, who noted:

"*where once marginal applicants would have simply been denied credit, lenders are now able to quite efficiently judge the risk posed by individuals and price that risk appropriately ….Subprime lending improved access to credit for consumers, and especially these more recent developments, has had significant benefits. Unquestionably, innovation and deregulation have vastly expanded credit availability to virtually all income classes. Access to credit has enabled families to purchase homes, deal with emergencies, and obtain goods and services….*"[1]

The innovations in the credit derivatives markets and credit risk transfer products enjoyed a warm welcome from analysts, researchers, market practitioners, regulators and policy-makers. They saw mainly the benefits of allowing credit risk to wander to institutions other than the loan originators. Diversification benefits were believed to be large. Alan Greenspan[2] stated that "*the development of credit derivatives has contributed to the **stability** of the banking system by allowing banks, especially the largest systemically important banks, to measure and manage their credit risks more effectively*."

However, numerous performance-based agency problems came along with securitizations, some of them stemming from the opaque reward system in the mortgage industry, in the investment banking and in the credit rating industry which in turn facilitated the deterioration of quality standards. Only one example is the reward anomaly in the mortgage market where brokers are rewarded for generating new mortgages on a volume's basis, without being exposed to the consequences of default. The same holds to a large extent for the investment banking industry and the credit ratings industry.

Through the possibility to securitize and sell the risk of the underlying portfolios, banks were encouraged to lend more and more at lower rates and/or to riskier borrowers than they would have done cet. par. without the chance to securitize. Thus, securitizing institutions lost the incentives to tightly monitor borrowers' credit quality and debt servicing. Followed, an unjustified credit expansion was fuelled. All of the above, along with the financial innovation in credit risk transfer techniques, along with the technological progress and the globalization of the financial markets – which itself also facilitated the globe-wide spreading of risk - led to the global financial market crisis.

Furthermore, through the growing participation of new market players like hedge funds and CDO managers practically two banking systems were developed: one under regulatory supervision, and another one - "shadow" banking system – out of the scope of banking regulation.

Having a wide support of acknowledged economists and standard setters a wide range of failures in the structured finance market was overlooked up to the critical stadium of the financial turmoil in 2007.

[1] See Remarks by Chairman Alan Greenspan at the Federal Reserve System's Fourth Annual Community Affairs Research Conference, Washington, D.C., April 8, 2005 available at http://www.federalreserve.gov/boarddocs/

[2] See previous footnote

This work deals with possible explanations of the recent market failure via analysis of some plausible causes. Market imperfections in the mortgage market are classic: asymmetric information and agency problems. But on top of it the spectacularly increased complexity of credit risk transfer products combined with inadequately assigned credit ratings to them and inadequate financial regulation and to a great extent inadequate or badly understandable accounting standards for complex financial instruments led to the invisible export of an unimagined magnitude of subprime structural problems from the United States globe-wide.

My dissertation work provides a comprehensive analysis of securitization techniques from different points of view. I consider in particular:

- The potential and attendant principal-agent problems within securitizations
- Various microeconomic deficiencies related to securitizations
- The treatment of securitizations and the attendant flaws within the current regulatory framework Basel II
- Implicitly the macroeconomic implications of securitization such as exporting credit risk and de-balancing financial stability

I present several partial solutions.

I use the terms "*securitization*", "*credit risk transfer*" (CRT) products, and "*structured finance*" products in some cases as substitutes. I explicitly define true sale securitization as opposed to synthetic securitization and credit derivatives in Chapter 2.

The problems I treat throughout my work refer mainly to true sale securitization and only implicitly to synthetic securitization which is mostly identifiable with credit derivatives.

The term *credit risk transfer* (CRT) is broader than the term *securitization*, and includes besides securitization techniques, as defined in Chapter 2, also credit derivatives and related innovative financial instruments which enable the transfer of credit risk.

The term *structured finance* is as well more broadly interpretable than *securitization* as defined Chapter 2.

In the mentioned cases where I use these three terms as substitutes it is clear in the context that securitization and securitization related structured finance techniques are taken into consideration.

1.1 Objectives of this work

My objectives in this work are to analyze the significant features of securitization techniques and related further issues which led to the recent financial crisis.

The concrete problems that I analyze are:

1) What were the mechanisms to broadly transfer the economic crisis from the U.S. housing sector to the financial sector over the globe;
2) Which typical characteristics of securitization techniques were commonly accepted as benefits of securitization but in fact turned to be threads for the financial and even non-financial sector;

3) What is the current regulatory treatment for securitizations and what are the existing securitization-related problems with it;
4) Can the recent financial crisis be considered a regulation failure based on inadequate securitizations rules and what were and are the reasons for that;
5) What should be done in order to improve quality of financial regulation and accounting standards in order to provide adequate regulation for the future?

1.2 The approach applied

My dissertation work presents a comprehensive analysis of the above problems.

I based my analyses on existing literature, on my personal professional experience and judgment, and on various data collections relevant to the defined problems.

In all the cases where I use the results or analytics of other researchers and existing academic literature, I refer to the authors and the sources concerned. The same holds for the data sources.

The rest of the work is my own author contribution.

Some aspects of securitizations or of the problems I treat are presented solely for completeness. In these cases, this fact is noted directly in the text.

This work is a practical work as opposed to a theoretical one. I decided not to prepare it as a theoretical work for different reasons.

First, the topic is still "alive". The securitization problems are still burning; the securitization losses are still burdening the balance sheets of banks and non-banks (in the cases where solvency was kept altogether). For these reasons, data histories for important securitization-related parameters such as default rates, losses given default etc. are quite insufficient and difficultly accessible.

Second, numerous prior theoretical works on the topic had skipped the flaws in securitization techniques and had wrongly propagandized solely their benefits.

Failures in prior theoretical models on securitizations can be explained by securitization-related features like, for example, (i) principal-agent problems in the securitization value chain and (ii) in the process of assigning external securitization ratings, but also by (iii) the short-sightedness of financial regulators.

I dare to think that pure theoretical works on securitization appear to be mostly useless in practical and scientific terms.

For these reasons, I address exactly the above mentioned aspects of securitization techniques because I consider them significant for the recent financial crisis, and for the future prevention of such undesirable extremes.

I concretely address the pre-defined problems, as listed in the previous section, as follows:

1) Regarding the first problem – securitization mechanisms for spreading credit risk over the globe - I present the structures of securitizations and resecuritizations and explain the existing credit risk transfer mechanisms. It is done under the consideration of official data referring to the market development, volume, collateral etc. (see Chapters 2 to 4, and 6).
2) Regarding the second problem in the above context, I set a new classification with the characteristics of securitizations which were pre-crisis wrongly perceived as benefits (see

Chapter 5). The classification I provide is a summary of the issues and risks that were traditionally (pre-crisis) wrongly perceived as benefits of securitizations. Based on this summarizing classification I address the real problems (or risks) further in my work. Risks that became obvious post-crisis such as agency conflicts or inadequate ratings to securitizations are analyzed in further detail in the Chapters 7 and 9.

3) Regarding the third predefined problem - current regulatory treatment – after presenting a short background on Basel I and Basel II, I directly start with critique on different topics in Basel II with focus on securitizations and the regulatory failures which became obvious at latest with the recent financial crisis (see Chapter 10 and Chapter 11). I directly point out at some of the current securitization problems which regulators and supervisors are not fully aware of (if at all) such as the securitization-restructuring measures and current increased opportunities for capital arbitrage between the banking and the trading book (see relevant sections in Chapter 10). The presentation of the problems itself is a valuable contribution to the analysis of securitization techniques since not all of the current regulatory problems are popular and the regulatory community is still unaware of their significance.
4) In order to address the forth defined problem – the financial crisis as a regulatory failure on the basis of inadequate securitization rules – I elaborate a case study (see Chapter 12).
5) Regarding the fifth problem – improving quality of financial regulation and providing robust regulatory standards for the future - I present various partial solutions. My contribution at this point is partially based on my own professional expertise and partially based on existing regulatory proposals on which I comment in order to point out at some potential flaws in them as well. Both are demarcated and respectively noted throughout the text (Chapter 13).

1.3 Out of the scope of my work

I purposely left some relevant topics out of the scope of my work. The reason is that these topics can and should be treated as separate dissertation-worth topics because they give enough potential for analyses of both their current and future treatment.

Asset Backed Commercial Paper Programmes (ABCP) and related short-term securitization products such as liquidity facilities within ABCP, etc. are not explicitly addressed in my work.

The regulatory treatment of securitization-inherent transaction components such as Credit Default Swaps and Credit Linked Notes on single names or baskets is out of the scope of my work. I solely shortly present their structure and functions within securitization transactions in Chapter 2 since they are an obligatory part in synthetic securitizations. The main reason to leave credit derivatives out of the scope of my work is that their current treatment is relatively clear, fix and unproblematic although different issues referring to potential improvements in it must be also addressed for the future. The same does not hold for the mixed structures such as credit derivatives on securitizations, constant proportion debt obligations, principal protected products and related interplays between securitization techniques and credit derivatives which means that their regulatory (and accounting) treatment is to a great extent unclear and must be often based on implicit interpretations of the capital rules in Basel II . So I do address them.

1.4 My contribution to theory

My merits in this dissertation work root in the multi-facet analysis of securitization techniques that I provide. Up to date a comparable analysis of securitization techniques which addresses the wide spectrum of aspects of securitizations such as (i) their treatment and the related attendant flaws within the regulatory framework Basel II, (ii) the various microeconomic deficiencies related to securitizations, and (iii) the implicit macroeconomic threads of exporting credit risk and de-balancing financial stability through securitization techniques has not been provided in the comprehensive way I built up my analysis.

As a basis for my analysis, I provide a new classification of the characteristics of securitization techniques which were pre-crisis wrongly perceived as benefits.

I argue that some internationally acknowledged institutions largely contributed to the turmoil via spreading wrong opinions, perception and reasoning regarding the potential benefits of securitization techniques and related credit risk transfer products among analysts, market participants and academics.

Since numerous prior theoretical works on the topic had skipped for example the flaws in the regulatory treatment of securitization techniques according to Basel II, the mere fact that I present these concrete deficiencies and comment on them must be seen as a significant contribution of mine to this topic.

In order to comprehensively criticize the current regulatory treatment I very shortly present the background of Basel II, I then directly point out at the various missed or solely partially treated securitization-related topics in the regulatory Framework Basel II and further regulatory failures which became obvious at latest with the recent financial crisis.

I present in detail why the recent financial crisis should be viewed as a clear regulatory failure due to the up to date short-sightedness of financial regulation. For the purpose of presenting these deficiencies I address in detail the main failures such as the inherent principal-agent problems in the securitization value chain, the inadequateness of assigning external ratings to securitizations and the potential numerous capital arbitrage opportunities within and outside banks due to inadequate financial regulation.

I directly point out at the current securitization problems which regulators and supervisors were not fully aware of (if at all) such as the securitization-related restructuring measures and currently existing increased opportunities for capital arbitrage between the banking and the trading book.

I analyze the reasons for the turmoil in the financial markets and consider securitization techniques as a key driver for the financial crisis.

Further on, in order to illustrate that the financial crisis was a regulatory failure based on inadequate securitization rules by real facts, I elaborate a case study analyzing the recent runs of the biggest banking institutions.

In fact securitization brought a magnitude of agency problems. The insights of the sub-prime crisis in the U.S. mortgage market and the subsequent total financial turmoil show that securitization techniques in fact ruined financial markets instead of improving capital market rigor and discipline which lies to a great extent in the principal agent deficiencies inherent within securitizations.

Securitization markets as they have been operating until today, could not have brought many macroeconomic benefits. The net macroeconomic effect of credit risk transfer innovations has been much more negative and largely damaging to the global economy.

Through providing partial solutions and professional author's assessment of some selected regulatory and accounting changes to securitizations I deliver a further experts' contribution to the topic. My contribution to the potential improvement of the effectiveness and quality of financial regulation and establishing robust regulatory standards for the future is partially based on existing regulatory proposals and partially based on my own professional expertise. Both are demarcated and respectively noted throughout the text. In the cases where certain aspects of securitizations are presented solely for completeness I noted this directly in the text.

However, even more important than the potential solutions, is the presentation of the problems itself since not all of the still existing potential threads arising from securitization techniques are largely popular and the regulatory community is still unaware of their significance.

1.5 Structure

I organized my dissertation thesis as follows.

In **Chapter 2** I provide a short overview of the main securitization principles, such as pooling, issuance, tranching, credit enhancement, etc. These first sections of Chapter 2 have primarily narrative character and serve to provide only an introduction into the basics of securitization techniques for the readers of this work. However the further sections in this Chapter which refer to the *Demarcation of Securitizations* from similar financial techniques and credit derivatives should be seen as my own analysis and interpretation of existing regulatory rules for this demarcation. This analysis is not trivial and should be viewed as my own contribution to the critical assessment and interpretations of regulatory rules regarding "demarcation". The solely demarcation is very important because the classification of a credit risk transfer product as securitization, credit derivative or another kind of financial product is the decision basis for its further treatment, for example for regulatory and / or accounting purposes.

Chapter 3 presents the development of securitization activities in Europe not only in terms of volumes and collateral structure but also regarding the entrance of new players - hedge funds and CDO managers - in the market for structured financial instruments. The role of these new market participants is crucial because they are not, or are only restricted, under regulatory supervision and risk reporting standards. Since they were actively trading spectacular volumes in securitization products they significantly contributed to the establishment of a "shadow" banking system and spreading the financial crisis.

Chapter 4 is practically oriented and provides an overview of the application of securitization to mortgage lending. In this chapter I introductory present the basic principles of mortgage origination and securitization, the role of the Government Sponsored Entities (GSEs) and shortly introduce one of the greatest evils of modern finance associated with mortgage securitization – the resecuritization of mortgage backed portfolios.

Chapters 2 to 4 have primarily descriptive introductory nature into my dissertation topic. My own analytical contribution in Chapters 2 to 4 refers to the Demarcation defined in Chapter 2 and to the single conclusions of the chapters. Further on, the data analysis and presentation of pure facts regarding the development in securitization activities in recent years should also be viewed as a technical contribution of mine to the selected dissertation topic.

In **Chapter 5** I provide counterarguments to the traditionally accepted key benefits of securitization and the driving forces behind it.

I summarize the single pre-crisis perceived benefits versus my own counterarguments in a table form as a new classification of these securitization characteristics. In fact, this new classification presents a summary of the following main parts of my thesis which deal with the shortages and dangers of securitization transactions.

I considered it important to present the traditionally perceived "advantages" of securitization techniques as a theoretical basis and justification for the economic behaviour of all market participants who turned to be fooled during the turmoil of 2007 and 2008. These pretended benefits of securitizations were also the reason for a great welcome from regulators and policy-makers who saw mainly the theoretical benefits of allowing credit risk to wander to institutions other than the loan originators. Through the wide support of acknowledged economists, standard setters and regulators a wide range of failures in the structured finance market was overlooked for quite a long time which is the topic of the further chapters in my work.

Chapter 6 deals with the crucial further development of credit risk transfer products. There I present the newcomer resecuritization structures such as ABS CDOs and similar multi-layer securitization-related financial instruments as an illustration of the growing complexity in securitizations. I consider and respectively describe resecuritization as one of the catalysts for the sub-prime crisis and for the general financial turmoil which is my analytical contribution in this chapter.

Chapter 7 deals with principal-agent problems in the context of securitization transactions. After a short presentation of some background on the principal-agent theory I focus my analysis on its application to asset securitization. There I introduce the basic constellations where asymmetric information problems occur within securitization techniques. I describe the reward systems both in credit rating agencies and on the investor side – in hedge funds etc. – as the wrong incentives in the context of principal agent theory. This chapter has primarily narrative character. It is based mainly on existing literature and is presented primarily for completeness of the topic.

Chapter 8 introduces significant facts regarding the recent financial crisis and explains to a great extent its occurrence. As an introduction to this chapter I inserted the crucial parts of a speech of Timothy Geithner, President of the Federal Reserve Bank of New York, hold in March 2007. My intention in this chapter was to show that major facts that preceded and were signs of a coming financial crisis were already known long before the magnitude of the crisis became obvious. In a next step, I analyze the occurrence of the sub-prime crisis and conclude on its main causes.

Chapter 9 is devoted to the rating agency crime. I consistently describe the main characteristics of external ratings, and some of the reasons for the misapplication of ratings to securitizations. It points out at the misleading rating agency practices as one of the major causes for the crisis via wrong assumptions, wrong consignees and the process of rating shopping. This chapter is based mainly on existing literature and is presented primarily for completeness of the topic.

Chapter 10 deals mainly with the current banking regulation Basel II and its potential flaws with focus on securitizations. The critical assessment that I provide should be viewed as my main contribution to theory via assessing the current regulatory treatment of securitizations. In order to comprehensively criticize the current regulatory treatment I present a short background on Basel I and Basel II, I then directly point out at the various missed or solely partially treated topics in the regulatory Framework Basel II with focus on securitizations. I directly point out at the inad-

equateness of assigning external ratings to securitizations, the potential capital arbitrage opportunities within and outside banks and the currently broadly used securitization-restructuring measures.

As regulators slowly perceived the earnest of the current situation in the financial markets enhancements to the Basel II capital requirements regarding securitizations were proposed. **Chapter 11** is devoted to this topic. The comments on the proposed rules should be viewed as my own contribution to theory via assessing the current proposals related to capital enhancements for securitizations.

In **Chapter 12** I elaborate a case study in order to question the usefulness and reasonability of the complete regulatory reliance on capital ratios. This chapter should be viewed as a contribution of mine to theory by presenting representative analysis of the reasons for the various bank runs due to the treatment of securitizations and to the flaws and failures in the current financial regulation.

Chapter 13 provides partial solutions and policy implications. Some of them are meanwhile discussed topics in the regulatory community, such as the future treatment of Credit Rating Agencies or of off-balance sheet vehicles. My contribution at this point is partially based on existing regulatory proposals and partially based on my own professional expertise. Both are demarcated and respectively noted throughout the text.

Chapter 14 deals with the current IFRS proposals with focus on securitizations. As an introduction into the chapter I shortly present some background on the current securitization accounting rules. Further on, I present the planned or meanwhile partially introduced accounting changes in IFRS related to securitizations that aim at improving accounting for securitization along with transparency for users of accounting standards. I comment on the Exposure Drafts *Fair Value Measurement*, *Classification and Measurement*, *Derecognition* and *Disclosures*. At a later stage of the finalization of my dissertation the final Standard IFRS 9 *Financial Instruments* (12 November 2009) dealing with and based on the Exposure Draft *Classification and Measurement* was issued. Since my comments on the preceding Exposure Draft ED/2009/7 *Classification and Measurement* were already incorporated in the work I partially kept them and additionally added the final definitions and decisions according to the Final Standard IFRS 9, especially emphasizing those that deviated from the preceding Exposure Draft *Classification and Measurement*.

Chapter 15 concludes by presenting my views on the contribution of securitization techniques and regulatory failures to the unimagined magnitude of the recent financial crisis.

2 Securitization

2.1 Definition

Securitization is a process in which assets, receivables or financial instruments are being pooled or purposely acquired in order to be pooled, and in a further step sold as so called "collateralized" assets to investors. These collateralized assets are "backed" by the cash flow or value of the originally underlying assets. Thus securitization is a method of transferring risk from one party, the Originator, to Investors through capital market transactions.

Generally in securitization transactions, risks of the originally underlying assets are transferred to Investors by the cash sale of debt instruments (bonds). These bonds are known as Asset Backed Securities (or ABS), whose cash flows and performance are completely dependent on the underlying portfolio of assets sold.

Subject to securitization are principally illiquid assets are they can not be easily sold in another way in the secondary market. Typical receivables getting pooled are mortgage claims, but also student loans, credit card receivables and as I will present later in this work other kind of debt (bonds) derived from the typical receivables. Thus, securitization is a process of converting receivables and other assets that are not readily tradable into securities by pooling and selling their ownership, so that they can be traded in the capital markets. Principally any assets can be securitized so long as they are associated with a steady amount of cash flow.

According to Andreas Jobst[3] "*asset securitization is a structured finance technique that allows for credit to be provided directly to market processes rather than through financial intermediaries. Asset securitization provides liquidity transformation by converting regular and classifiable cash flows from a diversified portfolio of illiquid present or future receivables*".

To some extent, securitization notes are similar to traditional "plain vanilla" debt instruments such as corporate bonds. The assets in the collateralized pool generate cash flows used to repay debt, and as I describe further, the distribution of available cash flows is carried out according to a subordination principle to junior and senior debt holders. As with "plain vanilla" debt, the credit quality of a securitization note depends on the following:

- will the securitized assets deliver cash flows sufficient to cover contractual obligations to debt-holders, and
- how do the terms and the structure of a given securitization affect the distribution of payouts to investors when cash flows from securitized assets are insufficient to satisfy all contractual obligations.

However, the complexity of securitization structures along with asymmetric information and inflated ratings made the securitization activities and related innovative credit risk transfer market to a financial disaster. This is addressed later in this work.

[3] Asset Securitization as a Risk Management and Funding Tool: What does it hold in store for SMEs?

2.2 Intention and aims of securitization

Main motivations for securitization of different types of assets in the last two decades were:

- It is a way of funding for business activities,
- It transfers credit risks and optimizes (manipulates ?) balance sheet,
- It successfully helps to manage capital ratios (according to the current capital rules !).

For corporates, securitization techniques were wide accepted as a tool for

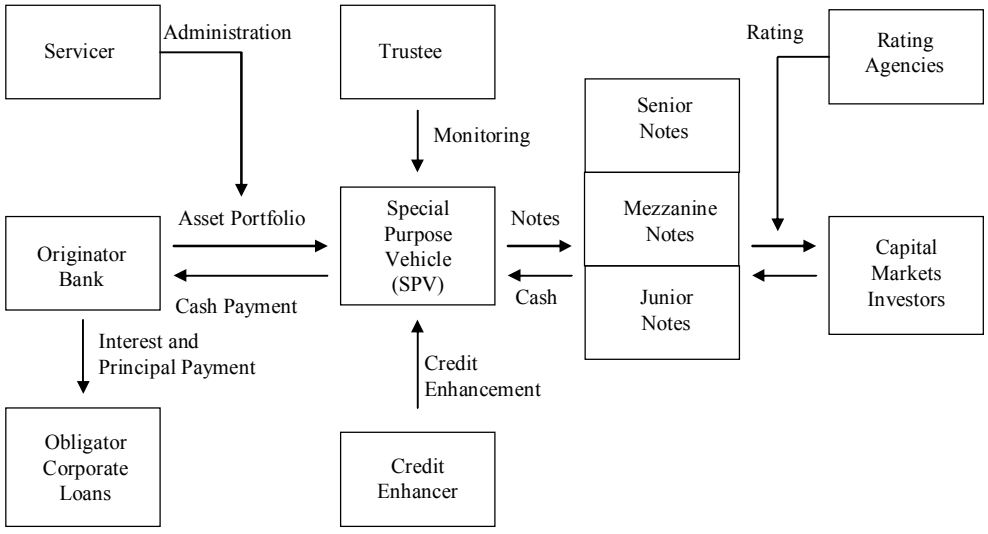
- Indirectly accessing the capital market and
- An alternative to existing creditors.

2.3 Key features of true sale securitizations

2.3.1 Pooling and transfer

After the Originator has identified the assets to be securitized, he incorporates a bankruptcy remote company, commonly referred to as a Special Purpose Vehicle ("SPV"). The SPV exists or gets started up for the sole purpose of purchasing the assets from Originator, and issuing securities against the asset pool.

Fig. 1: Securitization structure (true sale)



Source: Own presentation

Normally, through securitization the Originator is enabled to raise money more cheaply than by either borrowing against collateral (his expected receivables) or selling them to a factor. The reasons for the cheaper funding are:

- Analogous factoring, through the true sale of receivables the securitized assets are kept out of the bankruptcy estate of the Originator if he fails. Once the assets are transferred to the issuer, there is normally no recourse to the Originator, i.e. the issuer (SPV) is "bankruptcy remote",

in the case of bankruptcy for the Originator, the assets of the issuer (SPV) will not be distributed to the creditors of the originator. Therefore, the credit ratings of issued notes were often believed to exceed the originator's.

- Unlike factoring and secured lending, the issuance of backed securities through the SPV makes the investment available to a very wide range of small and less specialized investors; and
- For enhancing the creditworthiness of the SPV, the Originator may agree to repurchase bad receivables (first loss piece or equity tranche) or in another way to mitigate the market and especially the credit risk (via interest rate or credit derivatives) faced by the SPV.

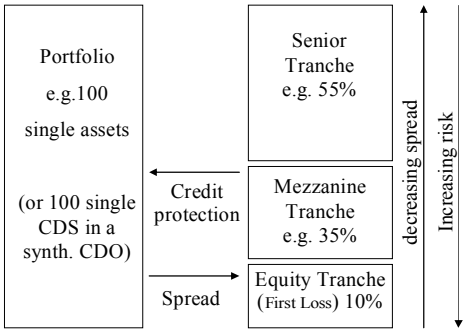
2.3.2 Tranching

According to Jobst the issued securities can be generally classified in two broad classes independent of the seniority and rating: debt-like (secured) notes and equity-like. Commonly holders of debt notes possess a prior claim to the underlying reference portfolio according to a contractually agreed seniority. Issuers / originators often retain the so called residual equity-like class as first loss position (FLP). The FLP is generally considered bad debt provision for expected loss.

Individual securities are split into tranches differing in seniority and risk exposure, e.g. categorized into varying degrees of subordination. Each tranche has a different level of credit protection or risk exposure than another: there is generally a senior ("A") class of securities and one or more junior subordinated ("B," "C," etc.) classes that function as protective layers for the "A" class. The senior classes have first claim on the cash that the SPV receives, and the more junior classes only start receiving repayment after the more senior classes have repaid. Practically, the subordination creates leveraged investment on the performance of the securitized assets ("reference portfolio").

Because of the cascading effect between classes, such arrangement is usually referred to as a cash flow waterfall.

Fig. 2: Portfolio tranches



Source: Own presentation

In the event that the underlying asset pool becomes insufficient to make payments on the securities (e.g. when loans default within a portfolio of loan claims), the loss is absorbed first by the subordinated tranches, and the upper-level tranches remain unaffected until the losses exceed the entire amount of the subordinated tranches.

The issued bonds can be typically separated in the following asset classes:

Fig. 3: Asset classes

Asset Backed Securities in the broad sense		
CDO (Collateralized Debt Obligation)	**MBS (Mortgage Backed Securities)**	**ABS (Asset Backed Securities) in the narrow sense**
• CLO (Collateralized loan obligation) • CBO (Collateralizes bond obligation)	• CMBS (Commercial mortgage backed securities) • RMBS (Residential mortgage backed securities)	• Leasing claims • Credit cards • Consumer loans • Student loans

Source: Own presentation

Generally all assets can be subject to securitization. However, the products most commonly being securitized in the last two decades were residential mortgages. The common characteristics of mortgages subject to securitizations, mostly sub-prime, are addressed in Chapter 8.

2.3.3 Issuance

A typical party issuing securitization notes in a securitization transaction are Special Purpose Vehicles (SPV) or comparable vehicles like Structured Investment Vehicles (SIV[4]) or Conduits. A common feature of these vehicles is their off-balance sheet character.

The issuer (SPV) issues tradable securities to fund the purchase of the assets from the originator. Investors purchase the securities, either through a private offering or on the secondary (capital) market.

The performance of the securities is directly linked to the performance of the assets. Credit rating agencies (CRA) rate the securities which are issued in order to provide an external perspective on the liabilities being created and help the investors make their decisions.

In order to achieve high credit ratings the SPV initiates various types of credit enhancement techniques.

2.3.4 Further parties involved

In transactions with static assets, a servicer may be involved to collect interest and principal payments on the underlying collateral, for ensuring that the property on which the mortgage was written is kept in good condition, but also for potential action in case of delinquency or default. In some cases the servicer can also help structure the securities and work with the financial markets when selling the securities to investors. The servicer runs the reference pool on behalf of the SPV. In most cases the bank continues to service the reference pool[5].

Some deals include a third-party guarantor which provides guarantees or partial guarantees for the assets, for a fee in return.

[4] SIVs invest in long-term, often illiquid complex securitized financial instruments and fund themselves short-term.

[5] I.e. the Bank is responsible for the collection of principal, interest and other relevant payments from the obligor.

Other parties involved in the securitization process are the trustee whose main duties include: monitoring the servicer, holding the collateral on behalf of the noteholders and supervision of principal and interest payments to the noteholders.

2.3.5 Credit enhancement

Securities generated in a securitization deal are "credit enhanced", e.g. protected, in a first step via the tranching as presented in section 2.3.2. In a next step, an additional protection can help a security achieve a higher rating which means that internal and external credit enhancements can be incorporated in order to mitigate the risks inherited within a securitization transaction itself.

Internal Credit Enhancement

- Excess spread: The interest rate on the receivables often exceeds the payments made to the investor. The difference between the two rates is paid into an account that can be used to cover any defaults or liquidity problems.
- Subordination principle (tranches): The SPV issues different note tranches. The most senior tranche, is superior in payment of principal and interest to all the other classes and therefore, has the highest credit rating and consequently the lowest risk premium.
- Overcollateralization: The total value of the underlying assets exceeds the total value of the securities issued, i.e. the incoming cash flows are greater than the outgoing. Theoretically a buffer against losses is thus created.

External credit enhancements

- Guarantees: Traditionally a bank or an insurance company guarantees a fixed return on the underlying asset.
- Cash collateral account: An account is created through a loan normally given by the originator, which is used as a buffer in the case of financial difficulties.
- Currency exchange agreement or swap arrangements: The originator or third parties agree to transform fixed into floating interest rates.
- Recourse/Direct credit substitution: The responsibility of the originator could either be the reimbursement of the SPV up to a specified amount of losses or the exchange of underperforming or non-eligible assets of the underlying asset portfolio with new ones to maintain the asset pool quality.
- Credit default swap: Typically a highly rated bank promises to pay a specified amount if a certain event occurs.

2.4 Demarcation to traditional securitization-like funding instruments

In the world without securitization companies (Originators) could (i) borrow money or (ii) sell assets. For example, producing companies usually sold their production on credit, and, had

typically significant accounts receivable outstanding. When funding was needed the company borrowed money from a bank against its receivables as collateral for a loan, or alternatively sold the receivables to a factor, who paid for them and collected on them itself.

Both techniques have certain disadvantages from the perspective of the investor (secured creditor or a factor) which is out of the scope of my work.

Some further traditional funding alternatives for raising capital, besides the above borrowing and factoring, are (iii) the issuance of bonds or (iv) stocks.

2.5 Demarcation to synthetic securitization and credit derivatives

Among the related instruments for credit risk transfer, it is necessary to differentiate traditional true sale securitization techniques from credit derivatives.

In traditional securitization, as presented in the previous section, ownership and risks of an underlying pool are transferred from the originator to the special-purpose vehicle through a **true sale**. The special-purpose vehicle passes the risks to the investors by issuing bonds collateralized by the pool receivables (asset-backed securities, ABS).

2.5.1 Credit derivatives

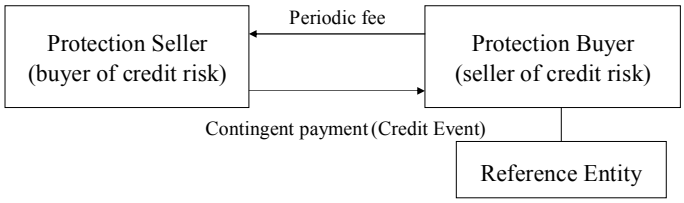
The most common credit derivatives are credit default swaps (CDS), credit spread products, total return swaps (TRS) and credit-linked notes (CLN).

In connection with synthetic securitization most important are credit default swaps (CDS) and credit-linked notes (CLN). I explain only both below since only these two types have relevance for the demarcation I provide.

Credit Default Swap (CDS)

The credit default swap is a bilateral financial contract in which one counterparty - the protection buyer - pays a periodic fee, normally referred to in basis points (b.p.) per annum, based on the notional amount, in return for a contingent payment by the protection seller in the case of a predefined credit event referring to a predefined reference entity.

Fig. 4: Credit Default Swap



Source: own presentation

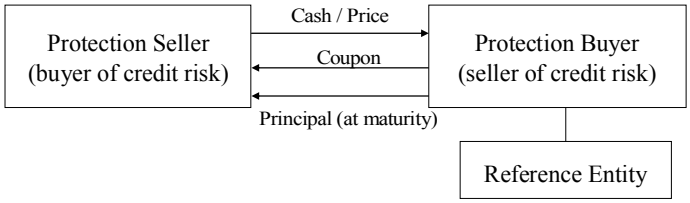
By engaging in a CDS the protection buyer aims at reducing or hedging his credit risk exposure. In case of a credit event the protection seller makes the negotiated contingent payment to the protection buyer.

Credit-Linked Notes (CLNs)

Credit-linked notes are funded balance sheet assets that offer synthetic credit exposure to a reference entity in a structure designed to resemble a synthetic corporate bond or loan. The originator can also pool together assets and create a reference pool.

Then the originator issues notes, which are linked to the reference entity. The investor purchases the notes and the originator receives cash in exchange. During the life of the CLN the investor receives interest. At maturity of the notes the investor receives the principal amount minus allocated losses.

Fig. 5: Credit Linked Note



Source: own presentation

The demarcation of a basket CLN from a true sale securitization note (e.g. ABS) is not trivial. One important difference between a CLN and an asset-backed note (ABS) is that the credit risk of the reference portfolio in a CLN is shifted to the capital markets by avoiding the true sale transaction common for securitization techniques.

Basket credit derivatives

As long as the reference entity represents a single borrower or bond, the term Single Name credit derivative is used. This is opposed to multi-name or basket credit derivative in which the reference entity is a pool of asset – loans, bonds etc. Basket CDS and basket CLN are common structures.

It is important to differentiate between linear (or pro-rata) baskets and n-to-default baskets as underlyings in credit derivatives.

N-to-default credit derivatives are multi-name or basket credit derivative, which stop to exist when the n-th borrower in the basket defaults.

Linear or pro-rata basket credit derivatives do not stop to exist when a borrower in the basket defaults. Every default just reduces the originally signed notional of the credit derivatives. All standardized index credit derivatives, such as iTRAXX and CDX, are of the type linear or pro-rata baskets. There exist also numerous credit derivatives referring to linear tailor-made baskets.

Fig. 6: Classification of credit derivatives according to different characteristics

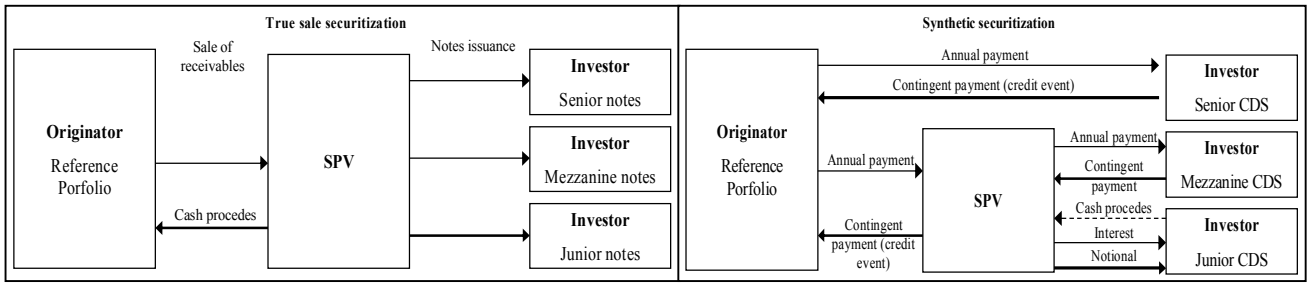
	CDS Single Name	CDS Basket	Credit Spread Option	Total Return Swap Single Name	Total Return Swap Basket	Credit Linked Note Single Name	Credit Linked Note Basket	Securitization – ABS, MBS, CDO etc.
Funding								
- Funded (cash in to protection buyer at beginning)						X	X	X
-Unfunded (no cash at beginning)	X	X	X	X	X			
Reference Entity								
Single – one underlying asset	X		X	X		X		
Basket – pool of underlying assets		X			X		X	X

Source: own presentation

2.5.2 Synthetic securitization versus true sale securitization

Synthetic securitization involves the transfer of credit risk through the use of credit derivatives that hedge the credit risk away from the originator. The credit derivatives involved can be either funded (e.g. credit-linked notes) or unfunded (e.g. credit default swaps). Synthetic securitization provides funding for originator only in certain cases, i.e. its main objective is credit risk transfer instead of funding as opposed to the main objective in a true sale securitization transaction.

Fig. 7: True sale vs. synthetic securitization



Source: Own presentation

The demarcation between traditional and synthetic securitization can in most cases be defined on the basis of the characteristics (i) true sale, which is presented only within traditional securitizations and (ii) usage of credit derivatives within the securitization structure, sale, which is presented only within synthetic securitizations.

Compared to synthetic securitization a true-sale structure offers the advantage of the financing effect as well as balance sheet improvement for the originator.

2.5.3 Synthetic securitizations versus basket credit derivatives

Especially the demarcation between synthetic securitizations and basket credit derivatives is not trivial.

For the purpose of clarifying the demarcation between synthetic securitizations and basket credit derivatives I introduce in the next section the criterion "stratification of risk" (tranching) as a basic characteristics of securitizations.

In order to illustrate how non-trivial the demarcation between synthetic securitizations and basket credit derivatives is, in the following sections I analyze in further detail structured finance credit risk transfer products such as credit derivatives on iTRAXX, principal protected swap (PPS) and constant proportion debt obligation (CPDO) which are in fact credit derivatives but at the same time tranche (or stratify) the credit risk from an underlying asset portfolio and for that reason must be also considered securitizations in a regulatory sense.

2.5.4 The demarcation of securitization types via "stratification of risk"

In this section I set the criterion "stratification of risk" (tranching) according to its Basel II definition within the securitization framework, in order to use this criterion in the next sections as a basis for the assessment of related products such basket credit derivatives, PPS and CPDOs as described in 2.5.3 and their classification for regulatory purposes.

According to Basel II "*a traditional securitization is a structure where the cash flow from an underlying pool of exposures is used to service at least two different stratified risk positions or tranches reflecting different degrees of credit risk*."

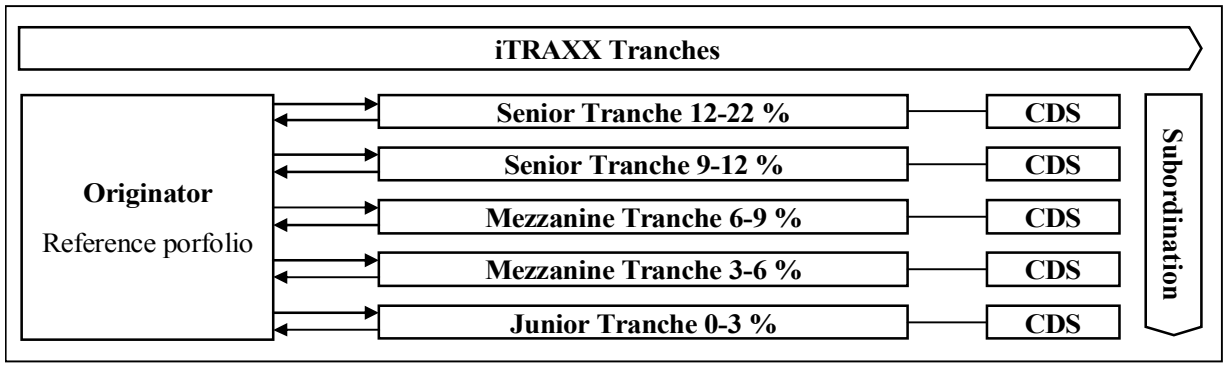
In short, a real cash flow (funding) and at the same time stratification is characteristic for traditional securitizations.

Alternatively, stratification of risk may arise through the use of credit risk mitigants, such as credit derivatives and/or guarantees, in the context of synthetic securitizations. The official definition of Basel II is as follows: "*….A synthetic securitization is a structure with at least two different stratified risk positions or tranches that reflect different degrees of credit risk where credit risk of an underlying pool of exposures is transferred, in whole or in part, through the use of funded (e.g. credit-linked notes) or unfunded (e.g. credit default swaps) credit derivatives or guarantees that serve to hedge the credit risk of the portfolio*."

2.5.5 iTRAXX – a mix from of credit derivative and synthetic securitization

According to BIS (2008), "*the most exceptional growth in corporate credit risk transfer products since 2005 has been in credit default swap indexes and index tranches*". The example below illustrates the way Index credit derivatives, e.g. iTRAXX CDS, works.

Fig. 8: iTRAXX tranching



Source: Own presentation

Indexes such as the CDX and iTraxx cover all major corporate credit markets worldwide, with separate indexes in many cases for investment-grade, high-yield, and crossover (credits nearest the boundary between investment-grade and high-yield).

The standard iTraxx-Tranches in Europe are: 0-3% (Equity or First-Loss-Tranche), 3-6% (Mezzanine), 6-9%, 9-12% und 12-22% (Super-Senior-Tranche). The underlying portfolio, maturity, settlement etc. are identical with the iTraxx-Index.

Through the tranching of the index investors are enabled to enter in a protection seller position in a specific segment (tranche) of the default loss distribution of the iTRAXX.

Fig. 9: Index tranching

Tranche (maturity 5 years)	Lower bound	Upper bound	Tranche thickness	Spread (b.p.)	Upfront payment (%)
Equity 0 – 3 %	0 %	3 %	3 %	500/500	16,75/17,25
BBB (3 – 6 %)	3 %	6 %	3 %	53/55	
AAA (6 – 9 %)	6 %	9 %	3 %	14,5/16,5	
Junior (9 - 12 %)	9 %	12 %	3 %	7,5/9,5	
Senior (12 – 22 %)	12 %	22 %	10 %	3/4	

Source: own presentation after LBBW Credit Trading, 21. August 2006

- Investor sells protection in the „Equity"-Tranche (Tranche Notional: EUR 3 Mio.)
- Investor receives:

- 16,75 % × EUR 3 Mio. = EUR 502.500 as an upfront payment

- 500 b.p. × EUR 3 Mio. = EUR 150.000 Spread p. a.

The synthetic Underlying of the „Equity"-Tranche is the iTraxx® Europe Benchmark with Notional amount of EUR 3 Mio. ÷ Tranche thickness (3 %) = EUR 100 Mio.

- At default in one of the 125 corporates in iTraxx® Europe Benchmark, the following calculation applies (Recovery-Quote 30 %):

- Loss in synthetic underlying: EUR 100 Mio. × 0,8 % × 70 % = EUR 560.000 - this amount must be paid by investor to his counterparty (Cash Settlement).

- Rest notional of equity tranche: EUR 3 Mio. – EUR 560.000 = EUR 2.440.000
- Future Spread: 500 b.p. × EUR 2.440.000 = EUR 122.000 (instead of EUR 150.000)
    - The investor must cover occurring losses in synthetic underlying up to the total amount of EUR 3 Mio.

According to the definition in the previous section, a credit derivative should be classified as synthetic securitization if it represents a risk position referring to securitized or tranched portfolio. Concluding, index credit derivatives such as a CDS on the iTRAXX as in the above example must be considered synthetic securitizations.

2.5.6 Principal Protected Swap - a mix form

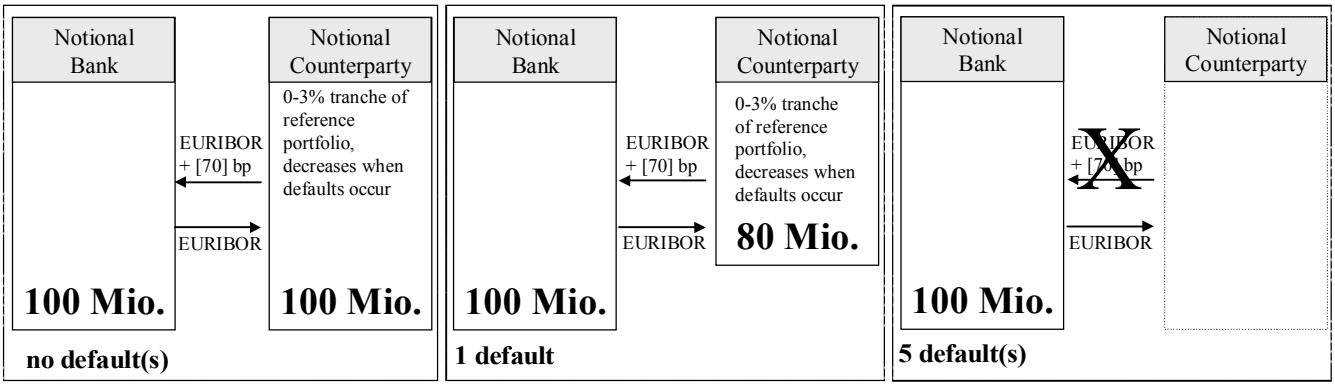
The Principle Protected Swap (PPS) is a financial structure in which only interest payments referred to a pre-defined notional are exchanged. It is a bilateral financial contract in which one counterparty - the protection seller - pays a periodic fee, normally referred to in basis points (b.p.) on the notional amount, in return for contingent payment plus spread by the protection buyer. The contingent payment refers to a variable notional which decreases contingent on defaults in a pre-defined reference portfolio, i.e. each default reduces the notional and subsequently the negotiated interest payment in b.p. on that notional.

For example, as showed in the graph below:

- The Bank pays quarterly to the counterparty 3-months-Euribor on the notional;
- The coupons paid to the Counterparty refer to the performance of a 0-3% Equity Tranche of a Reference portfolio and the contingent defaults in this tranche;
- In return, the Bank receives Euribor plus Spread (e.g. 3-months-Euribor + 70 b.p.)

The main feature of the PPS is that the single reference asset default in the portfolio affects the notional amount on which the counterparty pays its premium to the Bank, e.g. the more defaults in the reference portfolio, the smaller the premium paid from the counterparty to the Bank. The later defaults occur, the longer the counterparty pays the coupon to the bank. This implies that in the worst-case all assets in the reference portfolio can default and that the Bank does not receive coupon payment from the Counterparty any more, must however still pay the negotiated amounts (3-month-Euribor on the notional amount) until maturity.

Fig. 10: Principal protected swap



Source: own presentation

The classification of PPS is arguable. The structure has long been viewed by market participants as a standard interest rate derivative or (in best cases) as credit derivative. This view is wrong and the PPS must be classified as synthetic securitization structure for the following reasons.

The structure is stratified, i.e. tranched according to the regulatory definition of securitizations since the coupon paid by the counterparty refers to the performance of an equity tranche of a pre-defined reference portfolio. The coupons paid by the counterparty depend on the defaults in the securitized reference portfolio with the performance of the equity tranche being the trigger for. Furthermore, the tranches (0-3%) are built according to the subordination principle.

2.6 Summary of the chapter

The demarcation between synthetic securitizations and basket credit derivatives is not trivial.

In various cases of innovative financial products such as structured finance credit risk transfer products a case to case assessment of the structure is needed in order to classify the product and adequately treat it further for regulatory and accounting purposes.

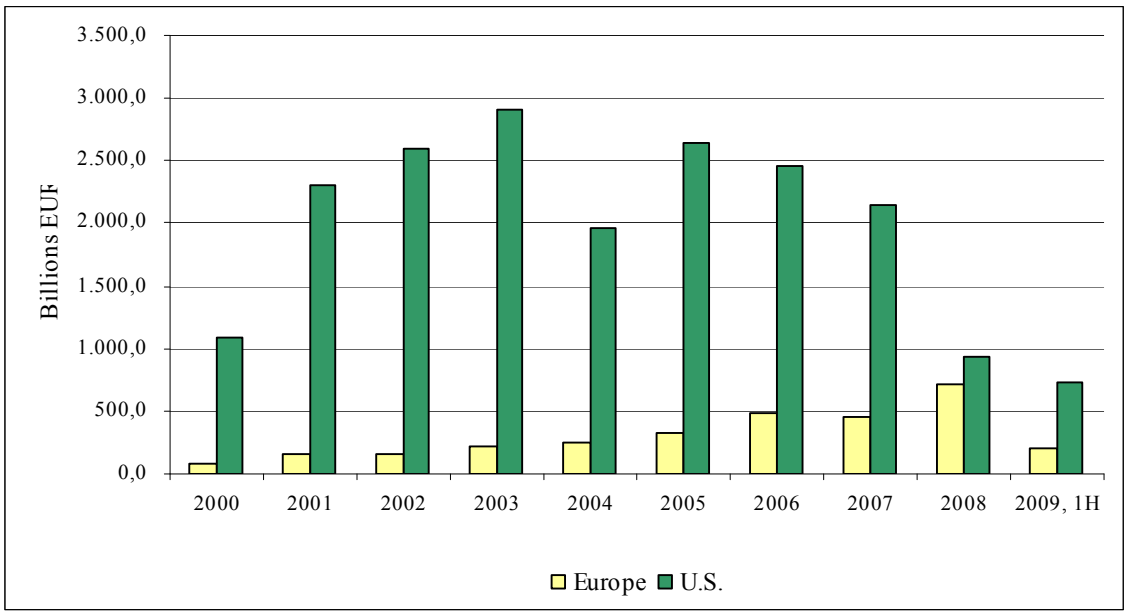
3 Development of securitization markets in Europe

3.1 Volumes of securitization transactions

In the United States the market for asset-backed securities developed primarily through the support of the government-sponsored entities (GSE), such as the Federal National Mortgage Association - Fannie Mae, and the Federal Home Loan Mortgage Corporation - Freddie Mac. They enabled mortgage loan liquidity by issuing and guaranteeing asset-backed securities at least for certain period of time. The GSEs contributed to a continuous growth of US agency mortgage-backed securities amounting up to USD 4 trillion at the end of 2006[6].

In contrast to the US experience, the European development of the asset securitization market started much later - at the end of the 1990s, see graph below - and was not triggered by the introduction of any specific government agencies.

Fig. 11: Historical development of securitization volume in Europe and U.S.



Source: own presentation, data of European Securitization Forum at http://www.afme.eu

The growth in securitization activity in the Euro area since 1999 can be explained by technological and financial innovation and investors' demand for assets with a good rating and extra yield over government bonds.

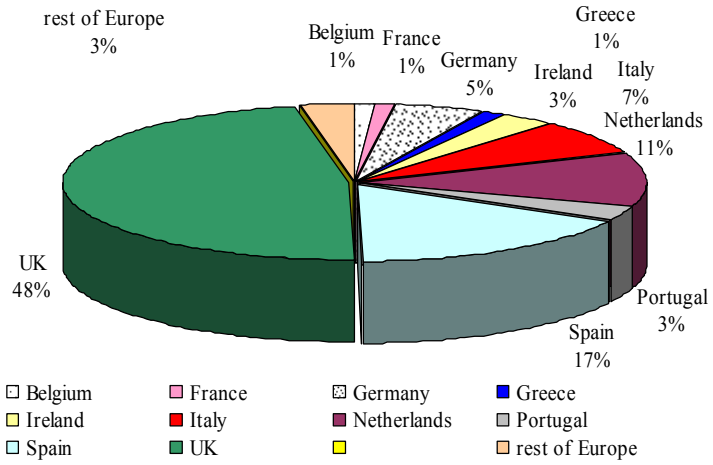
The technological progress worldwide contributed to the processing and pricing of financial data. This in turn enabled the financial innovation, and in particular the development of structured finance and securitization transactions. According to ECB in addition to the global trends, even the introduction of the Euro gave an impulse to the corporate bond and securitization mar-

[6] ECB, Working Paper Series No 838, December 2007

kets (ECB, 2007). Institutional investors increased their cross-country exposure and issuers gained access to a broader pool of potential investors.

The development of securitization in the Euro area remained quite heterogeneous across countries with the highest volumes in countries with significant increases in real estate prices since the introduction of the Euro such as Italy, Spain, Portugal and the Netherlands. I purposely present the shares by country and later by collateral per December 2007 in order to provide an adequate pre-crisis picture of the distribution across countries and collaterals.

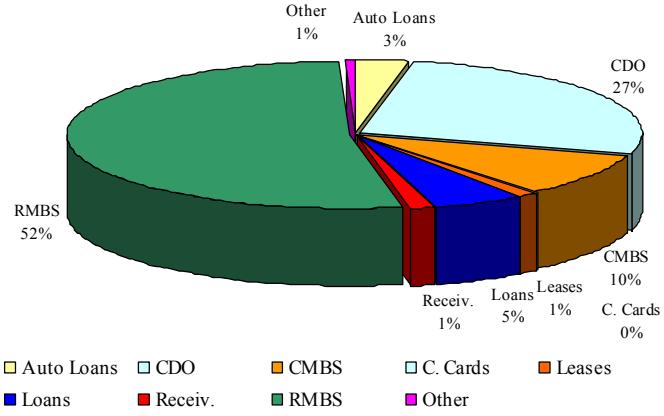
Fig. 12: Securitization market Dec. 2007: Shares in Europe by country



Source: own presentation, data as of European Securitization Forum

Mortgage-backed securities (residential (RMBS) and commercial (CMBS)) accounted for ca. 60% of all Euro denominated securitization notes.

Fig. 13: Shares of securitization transactions in Europe by asset classes as of Dec. 2007



Source: own presentation, data as of European Securitization Forum

3.2 The broadening of securitization

According to BIS (2008)[7], "*the broadening of securitization activity went hand in hand with a growing use of the "originate to distribute" business model at some of the largest banks and securities firms*".

Due to the "originate to distribute" model securitization techniques made possible for originators to earn fees without holding the underlying credit risk portfolios.

The role of investors in the broadening of securitization was their demand for higher-yields. Thus banks and securities firms originated or just purchased securitization structures and distributed them without holding the underlying credit risks on their own balance sheets.

With the fast growing development of securitization activity, the origination standards were practically set by the investors' requirements. According to BIS (2008) "*demand from investors for high-yielding ABS CDO tranches drove growth in the US sub-prime mortgage market to such an extent that dealer firms transferred more sub-prime risk to investors than was originated in 2005–06."*

3.3 New players – the hedge funds and asset managers

Hedge funds have become very active non-bank participants in the securitization market. According to Euromoney, September 2007, p. 10, hedge funds represented approximately half of US trading volume in structured credit markets.

Also the traditional financial institutions perceived hedge funds as both clients and competitors disintermediating traditional banking credit activities.

According to BIS, the distinction between the more sophisticated credit-focused hedge funds and asset managers became loose. "*Several hedge funds leverage their in-house credit expertise to act as managers for CDOs that they help to structure. Some of these managers now manage more assets in CDOs and similar vehicles than in traditional hedge fund vehicles*."

Hedge Funds were long believed to increase market since they ensure a certain level of diversification. This had long been explained by their low correlation with traditional asset classes which itself provides more diversification opportunities. It was also long wrongly believed that hedge funds contribute to price efficiency in capital markets exactly because they attempted to exploit inefficiencies in financial markets.

One typical characteristic of hedge funds and asset manager is that they have a very small proportion of investment assets. It means that they largely used leverage, short sales and derivatives and invested in exotic or illiquid instruments.

The main question still remains: were hedge funds posing risks to financial institutions or the other way around, financial institutions posed risks to hedge funds. One stands for sure, hedge funds took risk out of the regulated sector and spread it to investors. If investors understood what risks they had to bear, is presented in the next chapters.

[7] See "Credit Risk Transfer" (2008)

4 Securitization in mortgage lending

4.1 Mortgage origination and securitization

In the mortgage market, securitization converts mortgages to mortgage-backed securities. Thus a Mortgage Backed Security – MBS - is a bond with payments based on the payments of a collection of individual mortgages. As payments are made on the mortgages, they are passed through to bondholders.

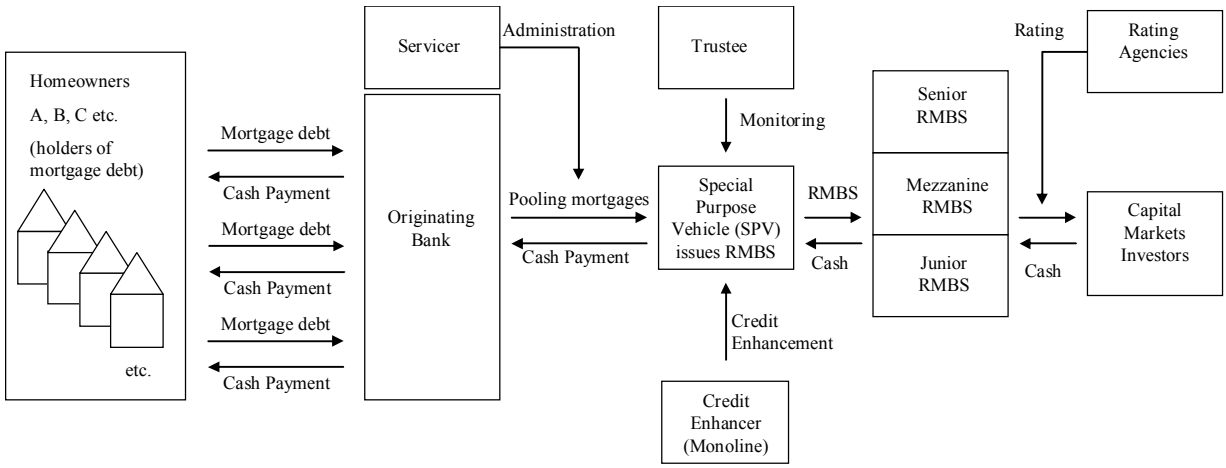
Traditionally, i.e. thirty years ago, banks distributing mortgages kept them on their balance sheets until maturity. Nowadays, the party offering the loan (the originator) sells it to a third party. The third party usually packages the mortgages and sells the payment rights to external investors.

About 10 years ago, issuers of "sub-prime"[8] mortgage ABS started to increasingly use subordination as the method of credit enhancement in their deals.

In the last ten years even a further step in the above process was introduced. The investors used their payment rights to the original mortgage to further back and issue new securities (resecuritization). This procedure can continue for numerous additional steps.

As a result, often the final buyers of the mortgage appeared to be many steps further from the actual mortgage originator.

Fig. 14: Residential mortgage-backed securities (RMBS)



Source: own presentation

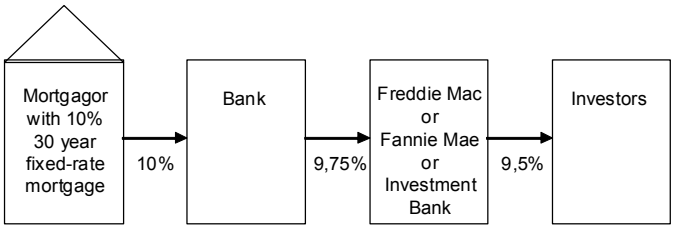
Originally the investors purchasing the subordinate tranches of those deals had significant mortgage expertise and extensive experience investing in the subordinate tranches of deals backed by mortgage loans. Analogous to the bond insurers, the traditional subordinate investors were methodical in their pricing of risk and were able to assess and deny loans carrying too high risk.

[8] Bad credit quality as defined in Chapter 8

At the very beginning of the MBS business the bond insurers and the subordinate investors provided a critical benefit to the whole system. As key players who accepted and priced credit risk on sub-prime mortgage loans, they were experts providing a market-based limitation on the riskiness of loans that sub-prime lenders could securitize.

The MBS issuance functioned for many years according to the following workflow: An issuer holds, let's say, 1,000 mortgages, each worth $100,000 with a 30-year maturity and a fixed interest rate of 1%. In total, he possesses a $100 million pool of mortgages which can be used, for example, to back 10,000 bonds, each worth $10,000 with a 30-year term and a fixed coupon rate of 9.5%. All bonds issued have the same security features (coupon rate, maturity, etc.) and importantly have the same claim on all payments.

Fig. 15: Mortgage origination and securitization in the U.S.



Source: own presentation

Theoretically, the MBSs must be structured so that interest payments on the mortgages are at least sufficient to cover the interest payments on the bonds issued (in best case, plus fees). Principal payments (either scheduled payments or prepayments) on the mortgages are used to pay down the principal on the bonds.

4.2 The role of Ginnie Mae, Fannie Mae and Freddie Mac

The U.S. issuance of securitization notes, and in particular of MBS, was strongly driven by the government sponsored agencies: the agency Ginnie Mae and the entities Fannie Mae and Freddie Mac.

Ginnie Mae was specialized on packaging of home mortgages backed by federally insured or guaranteed loans. Ginnie Mae guaranteed the timely payment of mortgages' principal and interest, thereby reducing the risks for MBS investors. The GSEs were under strong political pressure to ensure and promote home ownership for low income households.

The government-sponsored entities Fannie Mae and Freddie Mac purchased "conforming" mortgages from originators (which are mortgages with certain borrower quality characteristics and loan-to-value ratios and are smaller than the conforming loan size limit ($417,000 as of January 1, 2007). These government-sponsored entities used the conforming loans to back the MBSs they issue, adding guarantees that principal and interest on the mortgages would be paid.

The remaining issuers of MBSs were private sector financial institutions.

Most of these MBSs included securities backed by high quality (prime) loans, sub-prime loans, or "Alt-A" loans. The "sub-prime crisis", as described in Chapter 8, was mainly due to securitizations of the sub-prime and Alt-A sectors, where MBSs were backed by pools of the loans with the worst credit quality.

The difference between prime and sub-prime mortgage loans depends on the borrower quality. A prime loan indicates that the borrower has a good credit rating (an "A" grade), while the sub-prime borrower has a lower credit rating.

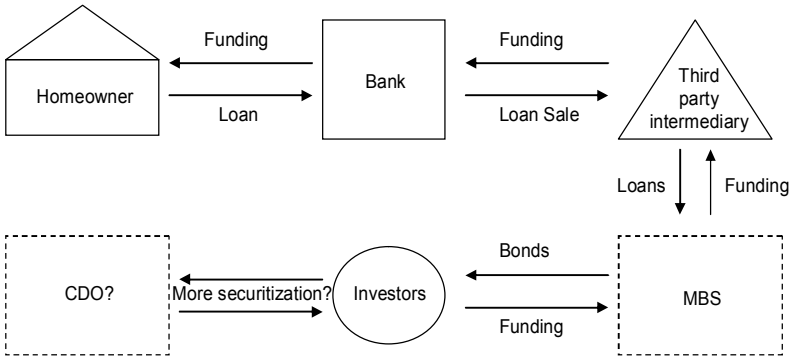
Alt-A loans were issued to borrowers that appeared to have good credit, but these loans did not meet the definition of prime or conforming. Often, Alt-A loans were issued to borrowers with limited or no income and asset verification ("NINJA", i.e. No Income No Jobs or Assets). In recent years, the Alt-A sector has increasingly included loans for which the loan-to-value ratio was too high.

The share of MBSs backed by sub-prime and Alt-A mortgage loans increased rapidly in the last decade which is presented in more detail in Chapter 8.

4.3 Resecuritization

The next evil in mortgage securitization was the resecuritization. It means that once created, MBS were not the end of the line. Pools of MBSs were collected and in turn further securitized. Bonds that were themselves backed by pools of securitization notes were referred to as collateralized debt obligations, i.e. CDO MBS, a CDO itself backed by MBS. Exactly the issuers of CDOs were the major buyers of the low-rated classes of sub-prime MBSs. I provide a more detailed analysis of resecuritizations in Chapter 6.

Fig. 16: Mortgage resecuritization



Source: Rosen, R. (2007): *The Role of Securitization in Mortgage Lending*.

4.4 Summary of the chapter

This Chapter provides an introduction into the mechanisms of mortgage securitizations. The recent innovations in the financial markets are relative and practically not as new as they seemed. There were great activities in repackaging mortgages into debt instruments.

What is new is that those securities were re-packaged into more complex products, which in turn were repackaged into even more complex structures. With every step in the cycle, the marginal macroeconomic benefit has fallen. Thus securitization in mortgage lending, not least due to the intensive support of the U.S. GSEs, largely contributed to further inhaling the housing bubble in the U.S. and in a next step to the global financial crisis which is further explained in Chapter 8.

5 Pre-crisis perception of securitization's growth's drivers

5.1 Overview of the chapter

In the last decade securitization was commonly understood as an important risk management tool, mainly because its feature of reducing cost of funding. However, the transformation of on balance sheet risk into marketable securitized debt got more and more complex and involved complicated financial structures affecting the credit risk of the original loans, market risk and strongly liquidity risk and the complex combination of these three risk categories. Further this transformation process even created further risks such as (i) operational risk based on the missing competence and understanding of pricing and managing the combination of the latter risks and (ii) systemic risk via the missing systemic perspective for considering the effects of the combination of these single risk types. This in turn led to the creation of extreme risk within the whole economy based on the combination of all these risk components.

After having presented the key mechanisms and key players in securitization markets in the preceding chapters, in this chapter I analyze the driving forces and potential benefits behind securitization techniques. In particular, I demarcate the characteristics, which were pre-crisis widely believed to be potential benefits of securitization techniques but in fact appeared to be dangerous shortcomings, from the characteristics that can still be considered benefits.

In this context, I introduce a new classification of the potential benefits of securitization techniques via classifying a large number of the pre-crisis perceived benefits into the opposite category - as shortcomings or threatening disadvantages of securitization techniques.

The conclusion of this chapter is that, although securitization techniques can be theoretically beneficial by certain risk diversification, securitization added little economic value to the financial system. Even worse, securitization exacerbated the depth of the recent financial crisis by adding various uncertainties which are further treated throughout this work.

5.2 Driving forces behind securitization

According to a Study on Asset Backed Securities conducted by GBRW[9] the following factors have been important for the development of the securitization market[10] (presented on the left-hand side in the table below).

In the following paragraphs on the right-hand side in the table I comment on these pre-crisis widely accepted drivers for the securitization expansion.

[9] GBRW is a financial sector consulting company commissioned in 2004 by the European Commission Enterprise Directorate-General to undertake a Study of the European securitization markets

[10] According to GBRW in 2004 the listed factors were even expected to be essential characteristics for the future development and expansion of securitization, see GBRW Final Report, 30 November 2004

I deliver an assessment according to which most of these driving forces for securitization development were merely a wrong understanding of the real facts behind securitizations' growth.

Fig. 17: Critical assessment on the driving forces behind securitization

Driving forces behind securitization (GBRW)	Author's critical assessment
Improvements in the techniques of risk analysis and greater investor sophistication	With the post-crisis knowledge and insights one must admit the fact that techniques of risk analysis have definitely failed. They appear to have been quite insufficient. Furthermore, the commonly believed investor sophistication was practically a misunderstood lack of professionalism and profound understanding of risks embedded in securitization transactions
The relative stability of ABS as a risk class, with consistently lower levels of default compared with other rated asset classes as demonstrated over a number of years	The relative stability of ABS as a risk class turned to be a fake. Conclusions of the kind "ABS had lower levels of default compared with other rated asset classes over years" demonstrate solely the superficial approach of the analysts of the above cited study commissioned by the European Commission. Worse than that, the described ABS-class stability assumption as a driving force behind securitization transactions was commonly believed to hold and commonly acknowledged by practitioners such as investors and originators as well by the academic, research and banking regulatory community.
The growth of derivative products and techniques for hedging and risk transference	Regarding the growth of derivative products and techniques for hedging and risk transference one has to admit that these products did not grow self-purposely. Their growth was namely pushed by both a) the highly complex structured finance innovation products aiming at securitizing asset pools with suspicious credit quality and b) by the apparently sophisticated market participants. Thus the vicious circle is: was the growth of the derivatives and hedging / risk transfer techniques the driving force behind securitizations or was not the securitization's growth in fact the force pushing the development of derivatives, and the risk transfer techniques with securitizations just swallowing all possible financial mechanisms for enhancing and transferring credit risk?
The trend in disintermediation, whereby banks originate and distribute some or all of the resultant risk to Investors	The trend in disintermediation whereby banks originated and distributed resultant risk to investors practically contributed to a steady increase in loan supply outside the regulated banking sector. In fact the originate to distribute model was a way of a steady inhaling the credit bubble as long as demand for loans existed on the one side, and an eager investor on the other side, ready to swallow a distributed "promise" of high returns stemming from the originated loans. It is still unbelievable that the originate-to-distribute model worked on that scale and in that efficiency since it is in fact an elementary financial blast.
Advances in information technology	The only unarguable factor is the advance in information technology.

Source: own presentation

5.3 Author's critical assessment of related existing literature

The factors listed in the previous section were definitely a driving force behind securitization. However, the supposed potential benefits turned to be ambiguous.

As a result of the financial turmoil, questions arise about whether structured finance products provided the intended benefits, the extent to which these products increased the risk of a crisis and exacerbated its consequences.

In the following chapters I analyze the reasons for the turmoil in the financial markets and consider **securitization techniques as a key driver for the financial crisis**. In the following sections I point out at the faultiness of the expertise at the time of the cited GBRW report.

Unfortunately the various factors as defined in section 5.2 and perceived benefits were accepted as a common opinion for the development of securitization. This wrong perception of the potential benefits shared by the analysts of official authorities, research agencies, rating agencies, banks and corporates led to spreading securitization widely in the economy.

Spreading the underlying risk via securitization techniques and credit risk transfer products practically enabled the creation of the recent financial turmoil. In particular spreading the risk of sub-prime collateral far beyond the boundaries where it was originated, i.e. from the U.S. to the worldwide rest of the financial sector, was only the origin of the turmoil.

However, not the sub-prime loans are to blame for the financial crisis. Same turmoil could have wept across the globe based on other types of bad-quality assets as well – students loans, credit cards, leasing receivables, or what so ever, as long as bad credit quality underlying loans had been securitized in the same way, i.e. with their worsening credit quality not being monitored and instead of proper monitoring of credit quality distributing the underlying credit risks to the internationally active financial institutions within the financial world.

In order to further reason my belief that the factual shortcomings of securitization have wrongly been considered advantages by numerous researchers, academicals and professionals, I again shortly refer to an existing article of Andreas Jobst, who counted as a guru in securitization matters for a number of years. According to Jobst "*from an issuer perspective, securitization is an alternative source of funds for profitable economic activity at most resourceful factor input and efficient cost of capital, which is reflected in one or more of the following key motivations:*

i. *to reduce economic cost of capital as a proportion of asset exposure associated with asset funding*
ii. *to ease regulatory capital requirements by lower bad debt provisions in order to manage risk more efficiently*
iii. *to efficiently access capital markets in lieu of intermediated debt finance at a cost of capital, which would not be possible on account of the issuer's own credit rating, and*
iv. *to overcome agency costs of asymmetric information in external finance".*

Author's critical assessment

I comment in more detail on the above citation in order to show the faultiness of such commonly acknowledged pre-crisis perceptions of securitization's advantages.

The first two arguments are more related to the refinancing advantages in financial institutions. Asset securitization was in fact used there as a capital management tool.

i. From today's post-crisis point of view the potential advantage from reduction in economic cost of capital in fact led to a great mostly unreasonable securitization expansion which in turn led in numerous cases to large banking losses, enforced balance sheet

write-downs and even banks' runs and bailouts, which is presented in the further chapters of this work.

ii. In the context of the second aspect from above, the lowering of bad debt capital provisions on the one hand meant that the current regulatory capital requirements were not adequate and this fact was greatly exploited by financial institutions. On the other hand, this exploitation of the capital rules also had its price – in fact, risk was not managed more efficiently but just dispersed away from regulated financial institutions to the unregulated sector (hedge funds and asset managers) and capital market investors who later had to bear not only the risk of bad debt but also its losses.

The last two cited motivations were perceived to be particularly relevant to corporate issuers. However, from today's perspective they are highly ambiguous as well, which is also explained in more detail in the relevant chapters regarding Ratings (Chapter 9) and Principal-Agent Relations (Chapter 7).

iii. From today's perspective neither the access to capital markets was efficient nor was the way to avoid the issuer's own credit rating via securitization techniques justified. Both were in practice the way to introduce inefficiency into accessing capital markets.

iv. Regarding the last Jobst's argument in favour of securitization cited above, agency costs were not only 'not overcome'. Instead even greater agency costs and perverse payment schemes arose on the basis of asymmetric information due to securitizations.

Astonishing, the following completely wrong perception, also expressed by Jobst, was widespread among researchers and practitioners, being also published in recommendations and reports regarding securitization techniques by the international financial regulator - the Basel Committee, the International Monetary Fund (IMF) and other institutions involved in the assessments and treatment of securitization techniques:

"*As both investment return (principal and interest) and losses from the underlying reference portfolio are allocated among the various tranches through prioritized contractual repartitioning (subordination) this risk sharing mechanism sustains a fine-tuned security design of customized debt securities with optimal mean-variance properties. Hence, issuers of ABS* ***improve overall market efficiency*** *by offering marketable financial claims on securitized asset exposures at merchantable quality (Kendall, 1996).*"

A broadly spread economists' opinion, also expressed by Jobst, which post-crisis as well proved its complete faultiness, is: "*From a broader economic perspective, the evolution of efficient securitization markets has served to mitigate disparities in the availability and cost of credit in primary lending markets by linking singular credit facilities to the aggregate pricing and valuation discipline of the capital markets. Debt securities issued in securitization transactions generally feature lower levels of investment risk than the original credit risk of underlying securitized exposures, mainly because securitized debt benefits from diversification and a variety of incorporated security mechanisms against credit and liquidity risk.*"

In the following chapters I present numerous counterarguments against the above numerous - and obviously completely wrong - generally accepted advantages of securitization techniques.

The prime question which arises on the basis of the numerous wrongly expressed semi-professional opinions, such as the above cited theoretical and academic comments, is: was everybody fooled by the international financial regulators, and by the researching and theorizing academic community (see Jobst, Kendall, GBRW, IMF, GFSR but also many others)?

My answer is: yes.

The recent financial turmoil was in the first place a securitization crisis.

Secondly, it was an incompetence crisis.

Last but not least, it was a financial regulation crisis.

5.4 Crucial characteristics of securitization - benefits or shortcomings?

In the following paragraphs I present some crucial but also critical characteristics of asset securitization which were pre-crisis widely accepted and "sold" to investors as economic benefits of securitizations.

However, exactly these characteristics proved to be just the opposite of what they were commonly believed. Instead of delivering economic benefits, they proved to be threatening shortcomings of securitization techniques. These characteristics are:

- Securitization increases liquidity and provides more efficient flow of capital;
- Securitization increases transparency via pooling of information;
- Securitization provides information to 3rd parties thus increasing transparency of collateral;
- Securitization allows originators to isolate their assets and thus achieve a credit position for issuing investment grade securities out of non-investment grade collateral;
- Securitization improves risk management;
- Securitization diversifies risk across a variety of investors all over the world;
- Securitization increases the availability of credit through originate-to-distribute;
- Securitization increases homeownership;
- Securitization allows for a lot more specialization;
- Securitization improves capital market rigor and discipline;
- Securitization provides market access for non-financials and changed disintermediation mechanism.

Author's critical assessment

These issues turned to be threats arisen from securitization activities, as we know ex-post. These characteristics of securitization led to its expansion since they have been considered benefits for a number of years. However, at the same time they must be definitely considered very strong driving forces for the recent financial bubble.

In the following table I deliver short counterarguments and explanations why the above listed characteristics of securitization techniques, although originally perceived as benefits, were in fact or proved to be real threats for the financial sector and the economy as a whole.

Fig. 18: Rethinking of the pre-crisis perceived benefits

Pre-crisis perceived benefits	The facts (post-crisis)
Securitization increases liquidity and provides more efficient flow of capital	In fact via securitization activities only temporary liquidity was achieved. Securitization, in fact, increased incoming cash flows to originators and improved their single level of liquidity. Since the securitization notes issued got tailor-made and highly complex, they were in numerous cases illiquid. In fact with broadening of securitization the financial markets came to the greatest liquidity squeeze since 1930.
Securitization increases transparency via pooling of information	The pooling of information worked in a perverse way. Credit risk transfer products became in recent years steadily more complex and intransparent. The argument of increased transparency via pooling of information not only doesn't hold. On the contrary, securitization leads practically to information loss. The more parties in the chain between the borrower and the end investor, the less the final investor can know about the credit quality of the securitized assets. The information about the underlying assets remains with the originator and is transmitted neither to the issuer (the SPV), nor to potential investors. As a result, neither the buyer nor the seller of the ABS has any idea of the underlying pool of assets, i.e. what is the credit quality backing the traded securities.
Securitization led to providing information to a 3rd parties thus increasing transparency of collateral	Post-crisis it became clear that intransparency in securitization notes turned to be one of the main drivers of the asset market illiquidity. Transparency must be viewed in two aspects: (i) regarding the quality of financial assets (transparency of collateral), and (ii) regarding the counterparty risks of the parties involved in a transaction. Both were deteriorated via securitization techniques. Transparency was further blurred by external ratings and credit enhancement.
Securitization allowed originators to isolate their assets and thus achieve a credit position for issuing investment grade securities out of non-investment grade collateral	Via securitization techniques issuers were practically provided a way to reconfigure sub-investment grade assets into investment grade tranches. The latter promised higher yields at a reduced credit risk. However, with the recent financial crisis in mind the robustness of risk diversification and the rating transformation from sub-prime residential mortgages to investment-grade tranches in mortgage-backed securities is, at best, questionable. What was attempted was in fact to make gold out of lead.
Securitization improves risk management	In various cases neither for risk management and regulatory purposes nor for accounting purposes securitization notes (ABS, MBS, CDO, etc.) were considered securitizations. Via the blind trust on external data provider different departments in a bank were unaware of the real characteristics of such securities and their risks attendant. MBS were delivered as standard Pfandbriefe until Mid-2008. This is a clear risk management failure. However, no bank admits such cases as its own failure. Instead banks blame data provider for such significant failures because banks being the end-users of the information pay significant amounts of money exactly for the "trust" they buy. Numerous other risk management failures exist as well.
Securitization diversi-	The broader risk-spreading was often cited as an advantage. However, securitization ob-

fies risk across a variety of investors all over the world	viously distributed credit risk in a perverse way. Instead of channeling risk to market participants able to absorb it, it channeled it to banks who increased it further. The diversification and similar risk-sharing arguments lose their validity latest when top rated securities (AAA) start to default. The US was the global leader in the development of the securitization industry and very successfully shifted its credit risks outside of the domestic market. Credit risk is now spread across the global economy and therefore negative credit cycles can be more easily absorbed.
Securitization increased the availability of credit through originate-to-distribute	The 'originate to distribute' principle leads unambiguously to credit expansion. However, it leads to agency problems as well. Compared to the 'originate and hold' principle where the lending officer gathered information on the creditworthiness of borrowers and worked directly for a Principal in the investment relationship (the originator), in the 'originate to distribute' world the lending officer of the originating banks worked for an institution (the originating bank) that is an Agent for the new Principal in the investment relationship (the SPV that purchases the loans from the bank and issues securities against them). Thus the information on the creditworthiness of the potential borrowers, i.e. underlying assets to be securitized, gets destroyed at the level of the originator. The agency relationship dilutes the incentive for information gathering at the origination stage.
Securitization increased homeownership	Securitization in fact increased home ownership in the U.S. via the increased credit supply which it enabled. However, the increased credit supply is a significant part of and cause for the recent financial bubble. Furthermore, if we assume that real estate is cyclical, securitization further eases procyclicality through risk concentration and makes the sector more vulnerable to the macro economy.
Securitization allowed for a lot more specialization	The long chain of related parties involved in securitization structures appeared to be not only inefficient but also fraudulent. This did not lead to benefit maximization from specialization. With more activities outsourced and value chain extended, more information asymmetries occurred.
Securitization improved capital market rigor and discipline	In fact securitization brought a magnitude of agency problems. The insights of the subprime crisis in the U.S. mortgage market and the subsequent total financial turmoil show that securitization techniques in fact ruined financial markets instead of improving capital market rigor and discipline which lies to a great extent in the principal agent deficiencies inherent within securitizations.
Securitization provided market access for non-financials and changed disintermediation mechanism	No doubt, securitization presents a significant change in the traditional way of credit provision and changed the process of disintermediation in financial markets. Traditionally, banks took deposits and used them to make loans. Securitization has enabled the funding for non-banking providers of credit products like mortgages houses and thus enabled their business. The problem with that is that many of them experienced runs and bailouts exactly because of their securitization activities.

Source: Own presentation

Although securitization techniques can be blamed for the recent financial turmoil, their perceived potential benefits were the basis on which securitization markets developed that fast in the past two decades.

Based on the above arguments, one must conclude that the securitization markets, as they have been operating until today, could not have brought many macroeconomic benefits. The net macroeconomic effect of credit risk transfer innovations has been much more negative and largely damaging to the global economy.

5.5 The remaining benefits

All in all, what still keeps its truth is that securitization provides issuers with more competitive capital management. It means that securitization can be used for the purpose of/ as means of:

- Active balance sheet restructuring and/or risk management;
- An alternative and less expensive source of funding;
- Removes assets off originators' books and reduces required regulatory capital.

From a capital market perspective, it is necessary to assess how all these aspects of securitization affect the shareholder value of the issuer and analyze the balance between expected benefits and drawbacks occurred.

The functioning mechanisms of the remaining potential benefits of a conventional securitization structure are shortly presented in the following section. This is necessary in order to, at least to some extend, justify that such great number of originators used securitization techniques in the past two decades.

5.5.1 Capital relief, capital and risk management

Financial institutions (banks and other regulated financial service institutions) are required to maintain minimum capital to risk-weighted assets ratios (regulatory capital, as required in Basel I and currently Basel II).

The regulatory regime under Basle I required the same risk-based capital charge on differently rated loans. Under that regulatory regime the main objective was to remove high quality but low yielding loans from the balance sheets via securitization in order to reduce banks' capital requirements. This led to e steady drain of high-quality loans from the balance sheet, which per definition increases the probability of bank insolvency.

The revision of Basle I into Basle II was intended to remedy this shortcoming through the implementation of discriminatory risk-weightings across rating categories. According to the new approaches risk weights were intended to be more closely related to loan grades, which I discuss in Chapters 10 and 11 in this work.

Via true sale securitization assets are taken off the balance sheet of the Originator. To that extent, the regulatory capital for the removed assets need not be maintained. Thus, securitization reduces the total cost of financing by the acquired capital relief.

By unloading credits off their books, loan originators reduce their regulatory but also economic capital charge, and at the same time, may use liquid funds from the proceeds of the true sale to refinance future lending activity.

The way of reducing the Regulatory Capital charge relating to a pool of assets via securitization can be very basically illustrated as follows:

- Portfolio size: €100.0
- Regulatory Capital required: €8.0
- Deduction of First Loss Piece (FLP) after securitization (removal of the assets from the balance sheet): €3.0
- Regulatory Capital released: €8.0 - €3.0 = €5.0

Regulatory Capital Saving of €8.0 - €3.0 = €5.0 has been achieved because the FLP was deducted from the Regulatory Capital. With the released capital of €5.0 the bank could generate new loans of €62.535.

The resultant regulatory capital saving after securitization not only improves the regulatory capital ratio according to the current capital regime. The released regulatory capital can be invested in further businesses.

Banks and financial institutions commonly use securitization as a means to avoid regulatory capital charges ("optimization of regulatory capital" in its positive form, and capital arbitrage as a worst case scenario), non-financial institutions use securitization mainly for liquidity management.

Even if regulatory capital is not under pressure, a bank may decide from an economic point of view that it needs to adjust the balance of risks in its overall credit portfolio and reduce its exposures to a particular sector, industry or region and diversify risks through securitization.

5.5.2 Leverage through capital relief

The risk sharing via securitization presents a leveraged investment, with risk-return profile of tranches issued completely different from the original risk-return profile of investment in the underlying assets.

Through capital relief, an improvement in leverage is achieved. The improvement in leverage, in turn, can improve the return on equity (RoE) of a company as is illustrated below.

Fig. 19: Return on equity enhancement via securitization

Bank A Equity=1.00		Bank B Equity=0.25	
Leverage RoE	30/1=30 0.30/1.00=30%	Leverage RoE	30/0.25=120 0.30/0.25=120%

Source: Own presentation

Leverage = Assets/Equity
Total assets of bank A and B are EUR 30 each
Net Interest Margin or Return on Assets (RoA) = 1% or 0.30

Implication: The higher the leverage, the higher the RoE; even with the same RoA (1%).

However, there is limitation beyond which it is not prudent for banks to increase the leverage. This fact became also obvious during the recent financial crisis. As a response to unreasonable increase in leverage, the national regulators impose loan loss provision requirements (for example

average 2% of total assets or 0.60 in the above example). The loss provision must be provided from capital, i.e. as in the above example Bank A will survive, but Bank B will have negative capital of 0.35.

The leveraged loss exposure of the securitization in relation to the overall notional amount of the underlying assets depends on the level of expected loss covered by the issuer through a First Loss Piece (FLP) to make securitized debt less sensitive to value changes in the securitized assets. At the same time, the retention of "concentrated risk exposure" lowers the amount of required economic capital if ex ante total default loss from securitized assets originally exceeded FLP.

Different counterarguments against the improved total return on equity via securitization can arise if securitization itself implies interest rate and liquidity risk resulting from the underlying reference assets or the security design of the securitization transaction itself. These counterarguments significantly complicate the economic rationale behind securitization and such risks and shortcomings are treated further throughout this work.

5.5.3 Funding

The market for securities in the past two decades was more liquid than the market for balance sheet claims (the loans on balance sheets of originators), which are illiquid. Thus, securitizing of the original balance sheet claims was used as fund raising option which was even independent of the originator's rating.

Many banks were not able to rollover their debt due to downgrading of the ratings of the issuer (e.g. for ratings below investment grade). Securitization techniques enabled financial institutions to increase the rating of debt much higher than that of the issuer and to obtain funding otherwise not feasible before securitization.

5.6 Was IMF assessment in GFSR 2006 – only a year before the turmoil - completely wrong?

After assessing a large number of the pre-crisis apparent benefits as shortcomings today, one necessarily asks himself: was everybody blind for the risks inherent in securitizations before the crisis?

In fact the wide population of market practitioners (investors and originators), supervisors, researchers etc. was fooled by financial regulators and standard setters.

For example, astonishing superlatives regarding credit risk innovation were published in the Global Financial Stability Report (GFSR) 2006 by the International Monetary Fund, not even a year before the most destroying financial turmoil since 1930.

According to the GFSR 2006 of IMF Chapter 2 "Influence of credit derivatives and structured credit markets on financial stability", "*there is growing recognition that the **dispersion of credit risk** by banks to a broader and more diverse group of investors, **rather than warehousing** such risk on their balance sheets, has helped to make the **banking and overall financial system more resilient***".

It is after the financial turmoil quite obvious how wrong the IMF economic opinions were. Banks are currently even required to calculate capital charges for warehousing risk, which is quite the opposite of what was recommended by IMF only two years ago.

I argue that IMF and similar internationally acknowledged institutions largely contributed to the turmoil via spreading wrong opinions, perception and reasoning regarding the potential benefits of securitization techniques and related credit risk transfer products among researchers, market participants and academics.

I end up this chapter with a citation taken from the GFSR 2006. The reader of this work can conclude himself.

"*The new participants in the credit markets in the last decade brought differing risk management and investment objectives and help to mitigate and absorb shocks to the financial system. The improved resilience may be seen in fewer bank failures and more consistent credit provision. Consequently, the commercial banks, a core segment of the financial system, may be less vulnerable today to credit or economic shocks.*"

- "*By enhancing the transparency of the market's collective view of credit risk, similar to bond markets before them, credit derivatives provide valuable information about broad credit conditions and increasingly set the marginal price of credit. Therefore, such activity improves market discipline.*"
- "*With the broadening of the product base (e.g., the development of mortgage and other asset-backed derivative instruments), these markets may also provide an early warning mechanism about economic stress in sectors beyond banking (e.g., the household sector).*"
- "*These new instruments may also influence the dynamics of credit cycles. Benefiting from better and earlier information about credit quality, market participants, particularly banks, may be able to adjust credit portfolios in a more proactive and gradual manner. In this way, bank behavior may become less pro cyclical, and credit cycles less volatile."*

So analyzing the above recommendations of IMF in the Global Financial Stability Report 2006 one must ask if the users of securitization techniques are to blame for the financial crisis.

5.7 Summary of the chapter

In fact, the experts on the field of securitization techniques and banking regulation - regulators and standard setters in internationally active regulatory bodies such as BCBS, IOSCO, IMF etc.- should have pointed out at the risks attendant in securitizations techniques instead of pointing out at the potential benefits of securitization for financial stability.

Through the numerous citations of wrong opinions expressed by internationally acknowledged institutions in this chapter I aim at apportioning the blame for the recent crisis of financial incompetence on these internationally acknowledged institutions.

The recent securitization turmoil was undoubtedly a crisis of financial incompetence. It was enabled and spread over the globe not only due to the technological progress and the globalization of financial and non-financial markets. Other important factors were the failures in current financial regulation.

6 Further development of securitizations' complexity

6.1 ABS CDOs / RMBS CDO as an example

In relation to the financial turmoil of 2007-2008, different structured finance instruments played a significant role. Several of these instruments led to financial market tensions, due to uncertainties in their valuations and exposures to the U.S. sub-prime mortgage markets.

Subsequently, these tensions spilled over to all segments of the financial services industry, in particular investment banks, Landesbanken and hedge funds with significant exposures to these instruments. The instruments involved in this process were in particular sub-prime residential mortgage-backed securities (RMBS) and collateralized debt obligations (CDOs), and **most often the combination of both (RMBS CDOs)**.

In the following chapter I present in more detail the structure ABS CDO as a crucial resecuritization instrument in the financial crisis. A variation of this structure is a CDO invested in MBS, for example RMBS CDO.

Before[11] 2004, resecuritizations such as ABS CDOs, RMBS CDOs, CDO square etc. were practically hardly existent.

According to Fitch (2007) U.S. structured finance collateralized debt obligations (SF CDO) issued in the period 2003 to 2007 began to increase their exposure to the sub-prime residential mortgage-backed securities (RMBS) sector, which itself was strong over these few years.

At the same time the main characteristic of the mortgage sector was competition in the origination of sub-prime mortgages which led to relaxed underwriting standards beginning in the second half of 2005 and into 2006. This in turn led to combining higher risk borrowers with riskier and more complex mortgage products.

A slowdown in home price appreciation in the second half of 2006 led to an increase in delinquencies in sub-prime RMBS and RMBS CDOs.

Thus, beginning in 2005, ABS CDOs' underlying portfolios were already increasingly concentrated in RMBS, particularly U.S. sub-prime RMBS, with a minority of the portfolio invested in tranches of other CDOs. A minority of ABS CDOs, so-called CMBS CDOs, invest entirely in commercial mortgage-backed securities (CMBS). According to Fitch (2007) earlier vintage SF CDO portfolios were more diversified across various asset-backed securities (ABS) sectors, and therefore the link between their performance and that of the sub-prime RMBS sector was not as strong as for 2003–2006 deals. It is meanwhile widely recognized that Structured Finance CDOs (SF CDOs) have been major buyers of sub-prime residential mortgage-backed securities (RMBS).

The underlying assets of an RMBS CDO are themselves RMBS tranches on diversified pools of mortgages. For this reason, an ABS CDO is a "two-layer" securitization or resecuritization- a securitization that invests in securitizations. In contrast, corporate CDOs and CLOs are "one-

[11] Joint Forum Review of the FSF's Credit Risk Transfer March, 2008, Basel Committee on Banking Supervision (BCBS)

layer" securitizations with exposures directly to the debt of corporate issuers. Another type of resecuritization is a "CDO-squared," which is a CDO that invests in other CDO tranches.

Because ABS CDOs are two-layer securitizations, their risk characteristics are highly complicated.

According to BIS (2008) the tranching of ABS CDO liabilities ensures that ABS CDO investors are exposed to an "all or nothing" risk profile that depends on the level of the system-wide stress. Small differences in the level of system-wide stress can have large effects on the losses suffered by individual ABS CDO tranches. The "all or nothing" character of a tranche's risk profile is more prominent for more senior tranches.

Fig. 20: "Two-layer securitization" (RMBS CDO)

Mortgage pools (including sub-prime)	RMBS tranches	Pooling of "mezzanine" (BBB) tranches of various portfolios	Creation of a new CDO with the following tranches
Pool A of residential mortgages	Pool A based RMBS: - "Super senior" (AAA) tranche - "Senior" (AA) tranche - "**Mezzanine" (BBB) tranche** - "Subordinated" (B) tranche - "Equity" unrated tranche	"Mezzanine" (BBB) tranche, pool A	"Super senior" (AAA) tranche (75%)
Pool B of residential mortgages	Pool B based RMBS: - "Super senior" (AAA) tranche - "Senior" (AA) tranche - "**Mezzanine" (BBB) tranche** - "Subordinated" (B) tranche - "Equity" unrated tranche	"Mezzanine" (BBB) tranche, pool B "Mezzanine" (BBB) tranche, pool C	"Senior" (AA) tranche (12%)
Pool C of residential mortgages	Pool C based RMBS: - "Super senior" (AAA) tranche - "Senior" (AA) tranche - "**Mezzanine" (BBB) tranche** - "Subordinated" (B) tranche - "Equity" unrated tranche	Etc.	**"Mezzanine" (BBB) tranche (4%)** "Subordinated" (B) tranche (4%)
Etc.			"Equity" unrated tranche (5%)

Source: own presentation after Criado and Van Rixtel (2008).

As a result of the increased exposure to sub-prime RMBS in SF CDOs, the credit deterioration in the loans backing those sub-prime RMBS implied a potential for credit deterioration to the CMBS CDOs. According to Moody's the collateral backing Moody's rated SF CDOs for the period 2003-2006 consisted of average 45% sub-prime RMBS exposure, but strongly varying up to almost 90% (see table below).

Fig. 21: Sub-prime RMBS Share of SF CDO Collateral Pool by CDO Vintage

Vintage	2006	2005	2004	2003
CDO Deal Count	79	82	55	34
Average Share	45%	47%	49%	41%
of which < Baa	22%	23%	24%	24%
Minimum	0,1%	2%	2%	4%
Maximum	88%	85%	78%	66%
Avg.# Sub-prime Issuers	64	62	68	63
Avg. Sub-prime Issuer Concentration	0,7%	0,8%	0,7%	0,6%

Source: own presentation after Moody's "*The Impact of Sub-prime Residential Mortgage-Backed Securities on Moody's-Rated Structured Finance CDOs: A Preliminary Review*".

ABS CDOs are described as "high-grade" or "mezzanine" depending on the quality of the collateral held by the CDO. High-grade ABS CDOs hold securities rated A- and higher, while mezzanine ABS CDOs are backed by BBB-rated securities. RMBS held by a high-grade CDO may have higher ratings either because they reference higher quality mortgages (better than sub-prime), or because they have better credit enhancement (depending on the seniority in the RMBS deal structure), or both.

Fig. 22: Subprime RMBS Share of High-Grade SF CDO by CDO Vintage

Vintage	2006	2005	2004	2003
CDO Deal Count	38	35	22	8
Average Share	44%	46%	43%	34%
of which < Baa	1%	1%	0,1%	0,1%
Minimum	0,1%	9%	23%	24%
Maximum	72%	68%	57%	43%
Avg.# Sub-prime Issuers	74	67	73	58
Avg. Sub-prime Issuer Concentration	0,6%	0,7%	0,6%	0,6%

Source: Moody's "*The Impact of Sub-prime Residential Mortgage-Backed Securities on Moody's-Rated Structured Finance CDOs: A Preliminary Review*".

Fig. 23: Sub-prime RMBS Share of Mezzanine SF CDO by CDO Vintage

Vintage	2006	2005	2004	2003
CDO Deal Count	41	47	33	26
Average Share	45%	48%	53%	43%
of which < Baa	41%	40%	40%	31%
Minimum	2%	2%	20%	4%
Maximum	88%	85%	78%	66%
Avg.# Sub-prime Issuers	54	58	64	64
Avg. Sub-prime Issuer Concentration	0,8%	0,8%	0,8%	0,7%

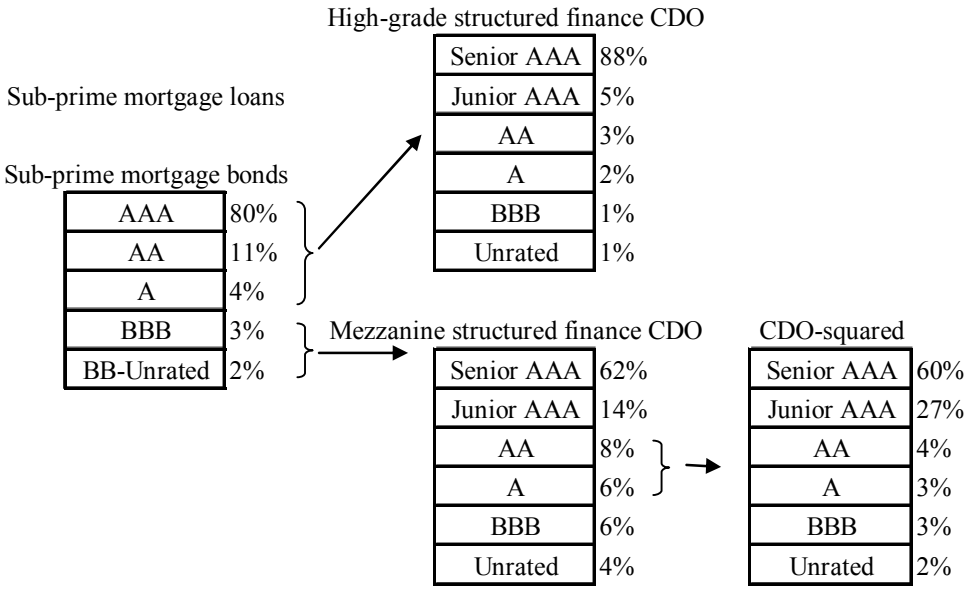
Source: see Fig. 22

Recent ABS CDOs were primarily invested in sub-prime RMBS. Within the SF CDO sector, mezzanine SF CDOs had the highest credit exposure to sub-prime RMBS due to their focus on the subordinate (bonds rated 'A' and lower) part of the sub-prime RMBS structure. According to Moody's the following Vintage Composition for high-grade and mezzanine SF CDOs invested in sub-prime RMBS exposure can be presented.

ABS CDOs can be classified as cash flow or hybrid structures. Cash flow CDOs are constructed to pay liabilities with interest and principal payments generated by cash investments in fixed income securities. Hybrid CDOs have exposure to fixed income securities through both cash investments and, synthetically, through credit default swaps.

In contrast to direct RMBS, sub-prime risks in ABS CDOs are harder to assess. The effect of potentially "higher-than-expected sub-prime mortgage pool losses" on ABS CDOs is indirect because the ABS CDOs, unlike RMBS, are not directly invested in mortgages but invest in securities that may themselves, either directly or indirectly, invest in mortgages. The complexity of these exposures, with the sub-prime mortgage loan risk being once or twice removed from the direct investment of the ABS CDO, requires reasonable estimation of CDO performance.

Fig. 24: Complexity of ABS CDOs



Source: own presentation after IMF 2008, GFSR

Because of their investments in sub-prime and other non-agency RMBS, many ABS CDOs have experienced significant negative rating migrations in 2007-2008.

According to Standard & Poor's, rating downgrades were most common in lower-rated tranches of CDO deals. Although downgrades in investment-grade CDO area are much lower than for speculative-grade notes, these are more significant because investment-grade notes comprise a much larger volume of total CDO issuance and because investors in these securities expect them to be particularly safe.

The very poor performance of ABS CDO raised concerns about the economic viability of these structures and the ability of rating agencies to effectively evaluate their risks. As CDO are quite complex it is not conventional to analyze the credit quality of CDO debt notes. Evaluating

the future cash flows in a CDO incorporates analysis of the asset side, i.e. of the expected performance of each individually securitized assets as well as its performance in combination with all the other assets in the collateral pool.

According to recent studies[12] "*if the pool consists of a large number of relatively small assets, uncertainty in the pool-wide credit loss rate will arise almost entirely from correlations in default losses across assets. Thus, idiosyncratic risk is diversified away. Only systematic risk factors that influence many assets at once are likely to influence pool-wide credit losses. This does not mean that average losses for the pool will be lower than the expected loss for a typical asset in the pool, but it does mean that average pool-wide losses will be more stable and pool losses will tend to be more highly correlated with economy-wide risk drivers*."

Thus RMBS CDOs are expected to perform well under most conditions, but to experience significant losses during times of systematic stress.

The performance of a CDO note is also strongly dependant on its position in the CDO capital structure and by the external credit enhancements embedded in the deal. The more senior a CDO tranche, the higher priority have its investors when distributing the cash flows from the securitized pool. A CDO deal's capital structure is linked to the volatility of collateral returns. In general, the less volatile are collateral returns around their expected level, the less protection is needed for a given CDO note to achieve a target rating. A CDO note backed by lower rated mezzanine RMBS collateral, for example, will tend to have more subordinated debt and equity below it than a comparably rated CDO note backed by senior RMBS collateral. Thus, the credit quality of a given CDO note may have only very modest relation to the credit quality of the collateral pool backing it. CDO notes are unlikely to incur losses if collateral performs at, or even somewhat below, expectations. On the other hand, if the collateral pool significantly under-performs, junior tranches may sustain severe losses as cash flows are diverted to repay more senior investors.

According to BIS (2008) "*...Diversification within CDO collateral pools tends to reduce the effects of idiosyncratic risk factors on the performance of CDO debt notes, particularly those notes with significant credit enhancement. Furthermore, because note losses depend on collateral performance in a nonlinear way, CDO note credit quality can deteriorate rapidly as underlying collateral becomes impaired, leading to large downgrades during stress conditions*."

CDO notes are designed to have higher sensitivity to systematic risk compared to corporate bonds. As a result, credit ratings, being focused only on contractual payment obligations, per definition were not able to capture differences in sensitivity to systematic risk. Even if the CDO default probabilities or expected losses can be forecast by a rating model with a reasonable precision, the pooling of assets and tranching inherent in CDO structures leads to the fact that CDO ratings perform differently from corporate debt ratings. The problems with shortcomings in the rating agencies' quantitative models are discussed in Chapter 9.

[12] See Nijskens and Wagner (2008), Franke and Krahnen (2008), Duffie (2008), Joint Forum (2008)

6.2 CDS on ABS

Another development in securitization related products was the use of CDS with ABS, MBS and CDO underlyings. This development was also supported by the introduction of standardized documentation for CDS on ABS by ISDA (International Swaps and Derivatives Association) in June 2005.

CDS on ABS were to a great extent a funding source for ABS CDOs. According to BIS (2008) the notional amount of CDS on ABS outstanding at year-end 2006 was estimated at $800 billion. CDS on ABS inherit the illiquidity of the underlying ABS and are as well difficult to valuate.

According to the standardized ISDA contract documentation the settlement for CDS on ABS was established as "pay as you go" market convention. This means that the CDS contract is not closed out when a credit event occurs. Instead, the contract stays in force and the protection seller makes payments to the protection buyer to cover interest or principal payments on the underlying ABS that fall short of their contractual amounts.

6.3 Constant proportion debt obligations

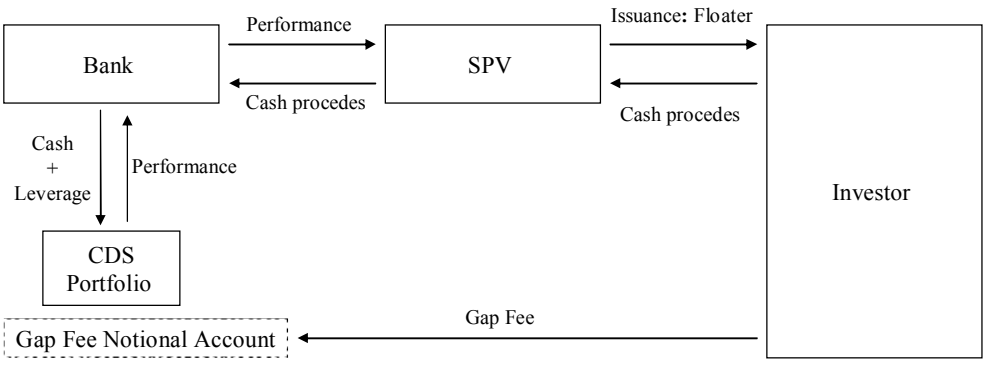
In contrast to the most securitization-related credit risk transfer products which represent tranched structures for risk reduction, a constant proportion debt obligation (CPDO) refers to market-value triggers.

The CPDO is a fully funded structured credit product. A special purpose vehicle (SPV) issues floating rate notes and receives cash proceeds from the investors.

The proceeds are held in a cash account as collateral for a long position (i.e. seller of protection) in the investment grade credit default swap (CDS) indices - CDX and iTRAXX. The notional size of the long position is a multiple of the size of the cash account, and in this sense is leveraged.

The notional of the floater is paid back to investors contingent on the behaviour of a predefined CDS portfolio.

Fig. 25: Constant proportion debt obligation



Source: own presentation

Leverage is adjusted dynamically during the lifetime of the CPDO. The manager of the SPV calculates daily the gap between the current net asset value (NAV) of the SPV holdings (i.e. the

sum of the cash account and the mark-to-market value of the CDS index portfolio) and the present value of all future contractual payments, including g management fees.

If a "Cash-in-Event" occurs, i.e. NAV equals the future contractual payments from the reference portfolio, the CDS portfolio must be sold and the cash-in amount invested in a risk-free bond. Although the investment is leveraged, the leverage can influence solely the amount and probability of floater payments. This means, that the investor's loss is limited up to the invested notional amount in the floater (i.e. no guaranteed notional for the floater, but investor does not participate in the leverage inherent in the floater).

The target leverage is given by a fixed formula as a multiple of the above described "gap", and is subject to an upper bound (e.g. 15).

This market value driven product should be classified as a securitization structure for the following reasons.

The credit (default) risk is in fact stratified in three tranches. The investor bears the losses from the CDS portfolio solely up to the invested amount. The Bank bears the losses from the leverage in the CDS portfolio beyond the amount invested by investor in the issued floater. The Gap Fee Account bears in fact the first losses. All these parts in the CPDO structure are put in a subordination hierarchy.

Further on, the payment rights and obligations refer to the realization of the credit risk in the securitized portfolio, i.e. the investor receives interest and notional contingent on defaults in the CDS portfolio.

Last but not least, the tranches are subordinated so that the first loss affects solely the Gap Fee Account without any further effects on the rest part and participants in the transaction. Thus the structure should be classified as a securitization.

6.4 Summary of the chapter

This chapter presented in more detail the process of creation and functioning of multi-layered structures (resecuritization). It presented the high complexity and the underlying risks which were in fact artificially generated by the creation of resecuritization structures.

7 Principal-agent problems in securitization

7.1 Introduction

In his speech "Credit Markets Innovations and Their Implications" on March 25th, 2007, President and CEO of the Federal Reserve Bank of New York Timothy Geithner underwrote the principal-agent problem in financial innovation related credit risk transfer:

".....The challenges of complexity are significant as well because they can exacerbate the problem of dealing with classic principal-agent problems. You can see this in the sub-prime mortgage market where, for example, a person may be rewarded for generating new mortgages on the basis of volume, without being directly exposed to the consequences of default; but these problems exist wherever incentives diverge and contracting is imperfect. Financial institutions typically maintain a range of different checks and balances to deal with the risk of misaligned incentives: for example, between a trader and the principal whose resources are at risk, or between the mortgage broker or underwriter and the firm that ultimately ends up holding the risk. But these checks and balances depend in part on the capacity of risk managers to observe and understand the underlying economic risk in these instruments. Where that is harder because of this combination of complexity, imbedded leverage, and short loss history, then market discipline will be weaker..."

This chapter is based primarily on existing research literature. Despite of this fact, I summarize here only research results and practical examples that I considered reasonable and relevant to the topic which should be presented in my dissertation thesis mainly for completeness.

Theoretically, the high market demand for asset-backed securities as a form of financing should mean that securitization reduces the cost of capital for doing businesses. However, it does not necessarily mean that cheaper is efficient. Particularly after the recent financial crisis, serious concerns about the efficiency of securitization transactions arose.

In the next sections I look in more detail at the various agents involved in a securitization transaction and their incentives. These incentives must be considered significant driving forces behind the sub-prime crisis.

7.2 Ex-course: basics of principal agent theory

In this section I introduce the basic terms and concepts of Agency Theory as an ex-course. I need this ex-course because I use them in the later sections for the analysis of the various relevant agency conflicts within securitization techniques.

The New Institutional Economics is an extension of the classical economic theory including the economic relevance and characteristics of institutions. Among the different concepts the New Institutional Economics analyses asymmetric information, adverse selection, moral hazard, monitoring costs, etc. It deals more concretely with the economic analysis of legal contractual relationships, for example the relationship between an investor and the management of his investment.

At the core of this relationship lies the separation of ownership and control, which is typical for securitized investments. This relationship is subject of the Agency Theory.

Agency theory raises as fundamental problem in organizations the self-interested behaviour. A corporation's managers may have personal goals that compete with the owner's goal of shareholder's wealth maximization. Since the shareholders authorize managers to administer the firm's assets, a potential conflict of interest exists between these two groups.

In the wording of agency theory, the principal employs the agent to fulfill a task in his place. To complete the task the principal also grants the agent a limited freedom of choice. The information after the closed contract is considered distributed asymmetrically in two ways: 1) the efforts of the agent cannot be observed directly by the principal and 2) the agent makes an observation that the principal does not make. Furthermore it is too costly for the principal to acquire the information. This problem field is known as Moral Hazard. It means that in a moral hazard situation a party insulated from risk may behave differently from the way it would behave if it were fully exposed to the risk. Moral hazard arises because an individual or institution does not bear the full consequences of its actions, and therefore has a tendency to act less carefully than it otherwise would, leaving another party to bear some responsibility for the consequences of those actions.

Moral Hazard is inherent in the securitization value chain.

A further aspect of the Agency Theory deals with asymmetric information before the contract is completed, i.e. the situation where the agent is better informed concerning his own qualities than the principal. This is known as Adverse Selection and refers to a market process in which "bad" results occur when buyers and sellers have access to different information: the "bad" products (or customers) are more likely to be selected.

Adverse selection is also commonly used in securitization techniques when "bad quality" assets are pooled and moved away from the bank's balance sheet.

The following concrete dangers which I explain in more detail in the next sections can occur:

- Lender lacks incentive to screen borrowers' default risks because his payment is based on a volumes measurement or because it has less incentive to control the credit risk of a loan that it sells via securitization than of a loan that it retains (Moral hazard)
- Securitization sponsors or originators may select higher risk assets to be securitized (Adverse selection)
- Servicers & collateral managers may not exercise best efforts to maximize collateral performance (Moral hazard)

Information asymmetries between lenders and securitization investors facilitate adverse selection and moral hazard.

7.3 Relevant principal-agent constellations in asset securitization

In the following sub-sections I present the common deficiencies of principal-agent relationships with regard to asset securitization. These lie in the relationship between the management of the underlying pool and the investor.

I consider the investor being the principal and the management acting as his agent.

7.3.1 Wrong incentives as an agency problem in securitizations' rating - remuneration conflicts

The booming market for AAA tranches was relying on the credibility of an independent and reliable rating process. Through the years, credit rating agencies became delegated monitors practically responsible for the credit assessment, the transparency and with it for the whole market in structured finance. The role of the credit rating agencies was limited to processing information and not controlling behavior.

The massive wave of downgrades for practically all structured finance asset classes in 2008 put doubts on the methodologies used by the agencies for these structures, which I address in Chapter 9 in this work. One of the reasons for the failure of methodologies is the incentive system in ratings agencies.

It is a well known fact that until circa 1970 the rating agencies were paid by investors i.e. by the users of ratings. This is in line with standard agency theory: The investor demands the rating service for own benefit, thus paying to align the interests of the rating agencies with the own ones.

After 1970 ratings gradually began to be solicited by issuers. This creates an obvious conflict of interest and should be even classified as a systematic failure in rating providing. The reason is that ratings being an assessment of the credit quality for a product to be sold, were ordered and paid by the seller (originator or issuer) and not by the buyer (investor) to whom they should deliver valuable information on the product he intends to buy.

The factual problem is that issuers have incentives to manipulate the process in order to get the highest rating possible as this means a smaller risk premium to pay to investors.

Issuers are not exposed to risk of the securities issued after they are sold, so the higher initial rating the notes receive, the more profitable issuers' business. Bond investors conversely, have their interests in most conservative rating assigned to the notes in order to maximize returns.

In best case these competing incentives meet at equilibrium. In recent years the equilibrium was not reached, with securitization notes consistently overrated.

Another problem is that the external credit rating provided by a rating agency was long a substitute for the own due diligence of regulators and investors.

At the same time rating agencies act on behalf of investors to theoretically produce unbiased ratings. With rating agencies paid by the issuer. The issuer can play the agencies against one another for attaining the best rating. This phenomenon is known as "rating shopping".

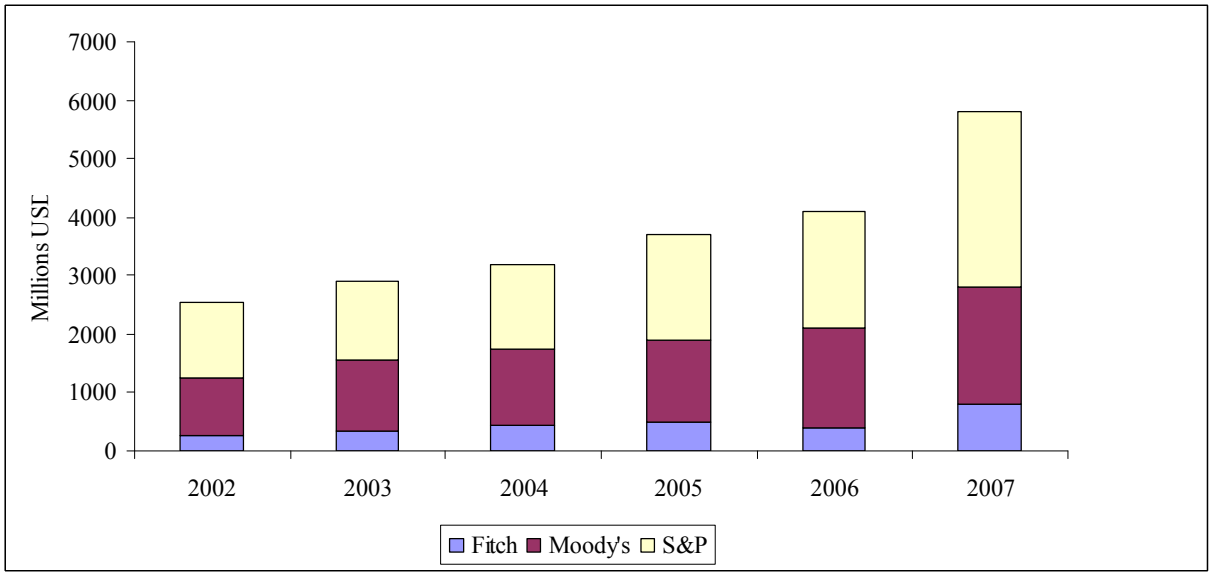
Another incentive to get an overstated or even corrupt rating for issuers and securitizers is that they also need to employ a rating agency with well-established reputation. However, the ratings market had high entering barriers in recent years and became oligopolistic for that reason. The limited competition led the major rating agencies to get their contracts without a real need to compete in their models and mapping criteria.

Post-crisis it became quite obvious that rating agencies and originators dramatically overrated and over-sized the highest-quality tranches of securitization notes. Practically, the rating agencies attained their lucrative profits because they assigned AAA ratings to non-prime financial structures exposed to default risk such as RMBS, RMBS CDOs etc.

Besides the above mentioned counterincentives another potential reason for the overstatement of ratings can be the incentive conflict between managers and line employees within the rating agency itself which lie in the chase of volume-related bonuses and short-run revenue expansion objectives as opposed to keeping the long-run agency's reputation.

A graph of rating agencies' profits is presented below. With time CRAs focused increasingly on maximizing short-term revenues, rather than long-term firm value.

Fig. 26: Revenue of Big 3 Credit Rating Agencies: 2002-2007



Source: own presentation after http://oversight.house.gov/documents/20081022112135.pdf

As the revenues of the top three rating agencies in recent years came from rating securitizations, it seems plausible that individual managers and analysts must have been tempted to risk the firm's reputation and it is doubtful that salary structures fully neutralized this temptation.

7.3.2 Wrong incentives as an agency problem on originator side

In recent years investors used to see only advantages in loans packaging and reselling to third parties. However, after investors have placed their capital, the originating bank, the servicer or SPV, can act self-interested, investing the money for maximizing their own benefit. Thus, the likelihood of moral hazard increases, especially if no further capital is planned or needed to be raised in the future. Since the principal (investor) has no direct control over the actions of the agent (management), self-interested behavior of the management is enabled through the asymmetric information between principal and agent.

The insights of the recent sub-prime crises in the U.S. mortgage market show that various arguments have to be considered for an objective assessment of securitization

- Selling the loan means it is harder to exactly track where capital losses are falling, if the loans decline sharply in value.

- The packaged loans are assessed in very gross terms as part of a relatively broad class. This made the market for packaged loans more prone to herd behaviour than the market for individual, idiosyncratic loans.
- Since real estate is relatively cyclical, securitization further eases pro-cyclicality thus making the sector more vulnerable to the macro economy.

7.3.3 Wrong incentives as an agency problem on investor side

A great mystery of the sub-prime crisis is why investors failed to understand the risk they were taking on when buying securities backed by sub-prime mortgages. An important contributing factor is surely the structure of fund manager compensation. Managers in hedge fund and CDO management vehicles were commonly compensated by the "2-20" rule: i.e. two percent of the value of the fund they are managing, and 20 percent of any yield the fund earns above a designated index.

This compensation scheme has asymmetric payoffs. If the fund does better than the index, the manager gains a lot; if it does worse, the manager in the short run is no worse off than if the index matches the market (although in the longer run, underperforming funds will lose assets). This obviously creates incentives for taking on greater risk.

Another explanation is that sub-prime based CDOs were quite complex to understand thus leading investors to rely solely on the risk assessments provided by the credit rating agencies to evaluate risk.

7.3.4 The extended value chain within securitizations

Since there is a long chain of parties involved in a securitization transaction problems of asymmetric information exist between borrowers and brokers, aggregators and rating agencies, investors and issuers.

Theoretically the individual activities in the securitization process were distributed over various units and parties in order to increase efficiency and proficiency. However, each of them has its own interests and its own managers, which on aggregate level makes the agency costs of the value chain difficult to estimate.

In order to be efficient, a right incentive system is necessary to assure sufficient quality of the overall product.

Generally mortgage originators had a short term perspective with their reward depending on the loan volume they contract, but not on the long term loan performance. This was fueled by the outsourced handling to other parties.

The important issue for the recent financial crisis was that sub-prime loans were originated with strong incentives for the production of loan volume with limited offsetting exposure to the underlying financial and legal risk.

Generally the cost advantage of outsourcing some of the securitization activities to specialized parties must be compared to the corresponding agency costs that occur in the case of such outsourcing, which is out of the scope of my work.

Agency problems in the above described chain of related parties can be resolved at each bilateral stage. They partly reason their view through reputation arguments which is only theoretical.

Especially after the devastating turmoil of the mortgage backed market it is questionable if any agency problems can be solved by reputational reasons. Two implications from the above discussion must be defined.

First, it does not seem reasonable to maximize benefits from specialization of parties without taking into consideration agency costs.

Second, there should be a trade-off between outsourcing activities in a more extended value chain and the retention of default risk by the transaction coordinator. With more activities outsourced and value chain extended, more problems due to information asymmetries occur. Hence, investors should be protected against negligent behavior of further parties involved.

7.4 Summary of the chapter

The numerous principle agent conflicts which exist on bilateral level in many financial transactions were fueled by wrong incentives on the originator side, on investor side, and also on CRA side within securitization. Even worse, the combination of the latter led to an exponential growth of agency conflicts within the extended value chain characteristic for securitization transactions.

8 The economic deficiencies

8.1 Introduction

As an introduction to the following chapter I present parts of the speech of NY FED's President and CEO Timothy Geithner, March 25, 2007 "Credit Markets Innovations and Their Implications". I cite primarily the passages pointing at coming great economic deficiencies.

President T. Geithner clearly described:

- the risks - more credit issuance outside the banking system; more debt held by institutions with a propensity to trade rather than buy and hold - and
- the benefits - greater range of product, better pricing of risk, more diversified portfolios among investors - of securitization.

……

The latest wave of credit market innovations has elicited some concerns about their implications for the stability of the financial system, concerns similar to those associated with earlier periods of rapid change in financial markets. Will the most recent credit market innovations amplify credit cycles, contributing to "excessive" lending in times of relative stability, and then magnify the contraction in credit that follows? Will they introduce greater volatility in financial markets? Will they create greater risk of systemic financial crisis?

These concerns have been heightened in some quarters by the problems currently being experienced in the subprime mortgage sector. It will take some time before the full implications are understood and the full impact can be assessed. As of now, though, there are few signs that the disruptions in this one sector of the credit markets will have a lasting impact on credit markets as a whole.

The recent changes in credit markets have been dramatic. We have seen rapid growth of structured credit products…..

These changes have contributed to a substantial reduction in the share of total credit held by banks. They have produced a greater separation or distance between the entity that first arranges a loan and those who end up holding the risk, and more intermediaries in that chain. And they have contributed to a dramatic increase in the number and diversity of creditors to any individual borrower, and a greater capacity to actively trade credit risk……..

There are <u>three aspects</u> of the latest set of changes which I think deserve more reflection.

U.S. financial institutions now hold <u>only around 15 percent of total credit outstanding</u> by the non-farm non-financial sector: that is less than half the level of two decades ago. For the largest U.S. banks, credit exposures in over-the-counter derivatives is approaching the level of more traditional forms of credit exposure. Hedge funds, according to one recent survey, account for 58 percent of the volume in credit derivatives in the year to the first quarter of 2006.

A <u>second issue</u> we need to consider stems from the complexity of the new credit instruments, the challenges they present in terms of valuation and risk measurement and their short history of experience in times of stress.

Even the most sophisticated participants in the markets for these instruments find the risk management challenges associated with these instruments daunting. This raises the prospect of unanticipated losses. Default rates are harder to predict where there has been a substantial change in the financial attributes of borrowers. The prices of instruments may not respond as expected to a given change in losses or in the value of the assets underlying these instruments. Hedging strategies may prove to be less effective than expected. Similarly rated instruments can behave very differently in stress events.

These challenges of complexity are significant as well because they can exacerbate the problem of dealing with classic principal-agent problems. ……

A <u>third issue</u> relates to the dynamics of failure and the infrastructure that supports these markets. The dramatic growth in the volume of over-the-counter derivatives and the growth in the number and size of leveraged funds inevitably complicate the resolution of the failure of a large financial institution that is active in these markets. The sheer number of financial contracts that would have to be unraveled in the context of a default, the challenge that a former colleague of mine likes to refer to as "unscrambling the eggs," could exacerbate and prolong uncertainty, and complicate the process of resolution……..

Summarizing the main issues from the above cited speech, one must admit an obvious regulatory failure based on the following problems:

First, the most closely regulated financial institutions – banks hold only 15% of the "non-farm non-financial" debt outstanding. By contrast, hedge funds unregulated, unsupervised, and largely unreported increased their investing operations. Thus the great regulatory failure was that the biggest players in the credit markets were left to freely do whatever they wanted.

Second, the adverse effects of the high complexity and riskiness of financial instruments were ignored. The threats were hidden behind the naïve belief that the variety and complexity of instruments provided more choice, ability to diversify and fine tuning opportunities.

Third, the disintermediation through new vehicles most of them out of the scope of any financial supervision was a recognized but regulatory unaddressed.

Summarizing, the Fed and other national regulators lacked a good picture of what was happening. While the structure and distribution of risks outside the set limits of financial regulation grew, no regulatory authority interfered to prevent the potential system failure.

8.2 The actual characteristics of sup-prime borrowers

Traditional conventional-conforming market was characterized by homogeneity. It means that borrowers are relatively homogenous in terms of down-payments and credit scores as measured by FICO[13].

By contrast, borrowers in the sub-prime market are highly heterogeneous and the differences are not fully transparent (see Golding, 2008). Sub-prime mortgages were an innovation aimed at ensuring home ownership for low income and minority households in the U.S.

The terms “sub-prime” and “Alt-A” are not official classifications of any regulatory authority. The terms describe borrowers perceived to be riskier than the average.

By definition sub-prime home equity borrowers are basically the same as other homeowners. The sub-prime borrowers are those who had equity in their house, but because of unemployment, hardship, or even over-use of credit they were excluded of the category of the traditional mortgage market. Sub-prime borrowers, however, might have the following problems: (i) insufficient funds for a down payment on the house; (ii) credit issues like lack of credit history or prior problems repaying debts; (iii) an inability to document income; (iv) a lack of information or insufficient information.

For that reasons, their sub-prime mortgage underwriting standards and the structure of the mortgages were different.

Sub-prime borrowers can be distinguished from prime borrowers through four characteristics:

- Leverage measured by Loan-to-Value (LTV),
- Debt-to-Income ratio,

[13] FICO is a type of credit score making up a substantial portion of the credit report that lenders use to assess an applicant's credit risk and whetherto extend a loan. Using mathematical models, the FICO score takes into account various factors in each of these five areas to determine credit risk: payment history, current level of indebtedness, types of credit used and length of credit history, and new credit. A person's FICO score ranges between 300 and 850. In general, a FICO score above 650 indicates that the individual has a very good credit history. People with scores below 620 often find it more difficult to obtain financing at a favourable rate.

- FICO scores, and
- Types of mortgages.

In terms of leverage, sub-prime borrowers have higher leverage relative to prime borrowers since they have less desirable credit profiles. According to Gross (2007), they borrow on average 87 percent of a home value versus a prime borrower's 75 percent of home. Since sub-prime borrowers have less equity in a house, their loans tend to be riskier.

Second, their debt-to-income ratio is higher; meaning a larger portion of their income is allocated to mortgage payments.

Third, FICO scores of sub-prime borrowers, which is an indicator of relative default rates, average around 630, whereas prime borrowers have scores of roughly 740.

Lastly, a majority of sub-prime loans are adjustable rate mortgages whose reset rates range 30 to 40 percent higher than the initial rate (Gross, 2008). Estimates have shown defaults among sub-prime borrowers are six times higher than that of prime borrowers. Because of the higher default risk, heterogeneity in this group of borrowers is likely higher.

The table below summarizes the main characteristics of U.S. borrowers (sub-prime FICO score typically below 640, and at some point delinquent on some debt repayments in the previous 12 to 24 months).

Fig. 27: Borrower characteristics – market description

Attribute	Prime/Jumbo	Alt-A	Sub-prime
Loan-to-Value (LTV)	65-80%	70-100%	60-100%
Weighted average LTV	Low 70s	Low 70s	Low 80s
Borrower FICO	700+ FICO	640-730 FICO	500-660 FICO
Borrower credit history	No credit derogatory	No credit derogatory	Credit derogatory
Conforming to Agency Criteria?	Conforming (Jumbo - all standards but size)	Non-conforming due to documentation or LTV	Non-conforming due to FICO, credit history, or documentation

Source: Gorton (2008).

The sub-prime mortgage innovation was successful for a couple of years.

Fig. 28: Ratings Change by Collateral Type for the period January 2006 to September 2007

	Prime/Jumbo	Alt-A	Sub-prime
Number of Upgrades	1.379	374	1.180
Number of Downgrades	416	73	5.111
% Downgrades relative to all ratings changes	23,18%	16,33%	81,24%

Source: Golding (2008), "Imperfect Information and the Housing Finance Crisis" includes Moody's, S&P, and Fitch rating changes.

8.3 Funding in sub-prime lending

The growing issuance of mortgage-backed securities indicates that funding of mortgage lending via financial markets has become increasingly important.

Data on capital funding are only limited available.

Although funding patterns strongly differentiated, sub-prime lenders commonly relied on securitization as a primary source of funding. The reasons for the strong reliance on securitization might have been various, which is out of the scope of my research.

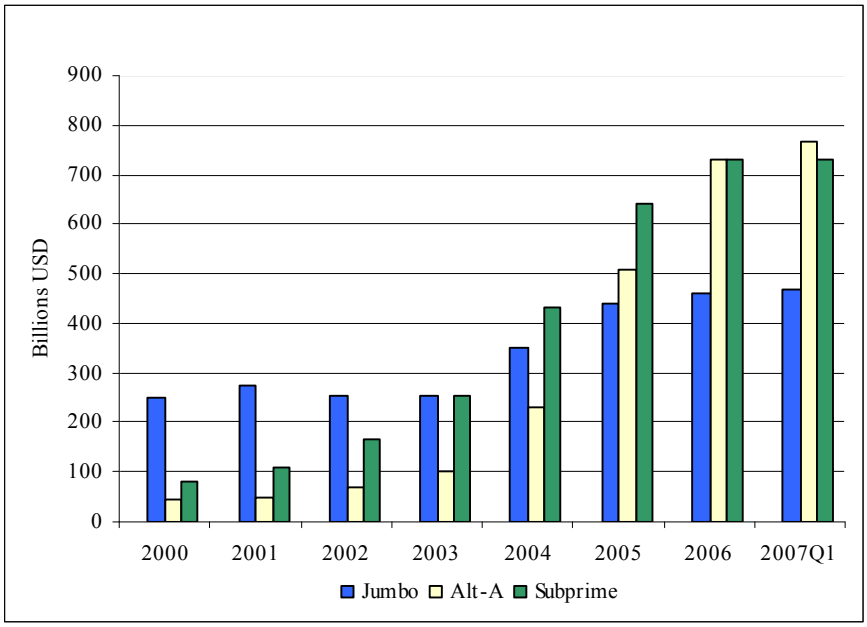
According to Gorton, in the U.S. about 55% of sub-prime loans were securitized, in Australia nearly 100%, and in the U. K. the majority of nonconforming loans were securitized through RMBS. Most UK sub-prime lenders did not take deposits and depended on capital markets for their funding.

8.4 The sub-prime crisis

The background for the crisis in the US sub-prime market is presented in the following section.

Meanwhile, the current financial crisis is generally agreed to have originated in the US sub-prime residential mortgage market. The U.S. sub-prime market grew rapidly in the 1990s, firstly without Agency participation. Since 2001 Fannie Mae and Freddie Mac began to buy senior tranches of RMBS backed by sub-prime loans. In 2004 they purchased 44% (versus 11% in 2001) of all sub-prime mortgages. The rest was securitized through the non-Agency securitizers. The graph and the table below show the development of Alt-A and sub-prime mortgage market in relation to the total mortgage outstanding and to the agency, respectively non-agency, mortgage component of the market.

Fig. 29: Non-Agency MBS Outstanding



Source: own presentation, Federal Reserve Data

The sum outstanding amount of sub-prime and Alt-A amounted ca. one quarter of the market in 2005-2007Q1 (see table below).

Fig. 30: MBS Outstanding

	Outstanding in Billions USD					Percent of Total MBS			
Year	**Total MBS**	**Agency**	**Jumbo**	**Alt-A**	**Subprime**	**Agency**	**Jumbo**	**Alt-A**	**Subprime**
2000	3003	2625	252	44	81	87%	8%	1%	3%
2001	3409	2975	275	50	109	87%	8%	1%	3%
2002	3802	3313	256	67	167	87%	7%	2%	4%
2003	4005	3394	254	102	254	85%	6%	3%	6%
2004	4481	3467	353	230	431	77%	8%	5%	10%
2005	5201	3608	441	510	641	69%	8%	10%	12%
2006	5829	3905	462	730	732	67%	8%	13%	13%
2007Q1	5984	4021	468	765	730	67%	8%	13%	12%

Source: own presentation, Federal Reserve Data

It must be noticed that over the period 2000-2007, the outstanding amount of agency mortgages doubled, but sub-prime grew 800 percent.

The issuance in 2005 and 2006 of sub-prime and Alt-A mortgages was about 30 percent of the mortgage market. Since 2000 the sub-prime and Alt-A segments of the market grew aggressively as opposed to the Agency issuance(i.e., the government sponsored entities of Fannie Mae and Freddie Mac), which fell from ca. 80% to its half by issuance and to 67 percent by outstanding amount.

The substantial reduction in interest rates in 2002 after September, 11th, encouraged disproportionately demand in the sub-prime market. Debt service capacity appeared to be more attractive with the fallen interest rates. The home price appreciation and the favourable economic climate further facilitated the demand.

According to Adelson and Jacob in their analysis "The Sub-prime Problem: Causes and Lessons", 8 January 2008, "*one reason for the sub-prime crisis can be found in the housing bubble, which, in turn, was accommodated by the Federal Reserve's accommodative interest rate policy of the early 2000s.*"

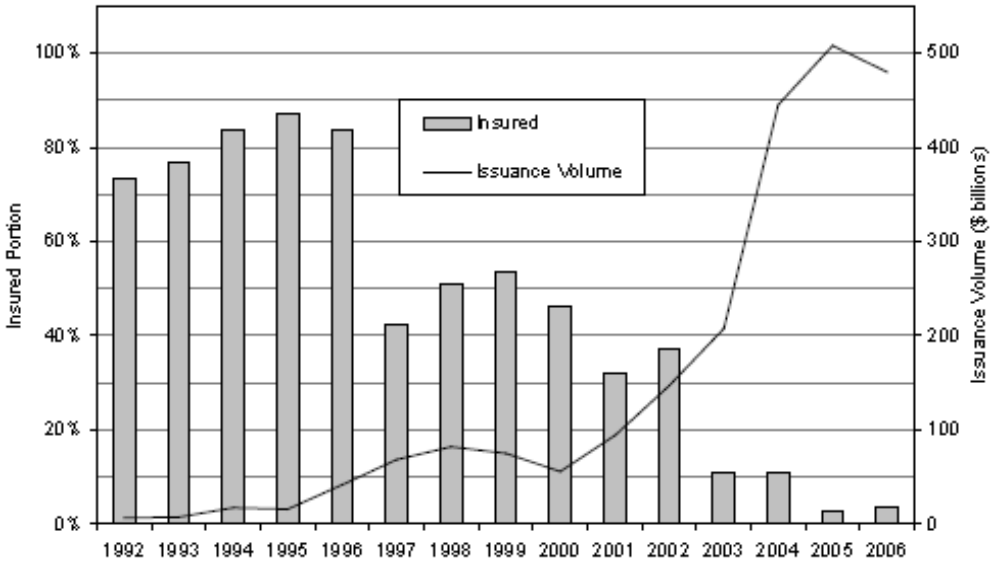
The rapid growth of the sub-prime sector raises concern about the potential negative effect of highly competitive housing finance on increased risk-taking. Another question is whether the new borrowers' access to housing credit has given additional support to house prices, which in turn led to more lending and higher property prices, which led to even more lending.

A significant issue is the fact that until 1997 most home equity ABS used bond insurance for credit enhancement. This made bond insurers the main market players to assess and price the credit risk on deals backed by sub-prime mortgages. Their methodology was based on analysis of the underlying loans and on the seller/servicer's track record. "*Moreover, a bond insurer would not accept unreasonably risky loans for inclusion in deals that insured. The bond insurers' willingness to say "no" was a key constraint on the riskiness of loans that originators could make*".

From around the middle of 1997 subordination as a method of credit enhancement was introduced by issuers of sub-prime mortgage ABS. At the beginning the buyers of subordinate tranches were traditional subordinate investors with mortgage expertise and experience such as bond insurers, who based their methodology on analysis of the underlying loans for the pricing of associated risk and were reluctant to accept high risk loans.

Thus, subordinate investors and bond insurers were kind of competitors in the sub-prime mortgage area. According to the graph below, the market established an equilibrium for ca. the period from 1997 through 2002with bond insurers' credit enhancement on about half (40%-55%) of the new deals and subordination as credit enhancement on the remainder.

Fig. 31: Insured Portion of U.S. Home Equity ABS Issuance



Source: Adelson (2008)

According to Adelson and Jacob (2008), "*the bond insurers and the subordinate investors provided a critical benefit to the whole system*" being key players pricing credit risk on sub-prime mortgage loans and thus providing a "*market-based limitation on the riskiness of loans that sub-prime lenders could securitize. Moreover, because both the bond insurers and the subordinate investors had substantial experience and deep expertise in the area of mortgage risk, their pricing decisions and their risk tolerances were sensible*."

Thus, a reasonable hypothesis also expressed by Adelson is that with the rise of securitization bond insurers and subordinate investors constrained sub-prime lenders from making unreasonably risky loans through their pricing and risk aversion.

However, from 2004 on, home equity ABS became the main asset class backing CDOs. The market began to create even "synthetic ABS" (i.e., CDS on ABS) to meet the strong demand from the CDO sector and the dominant market players pricing credit risk on sub-prime mortgage loans became CDO managers and CDO investors. ISDA's introduction of standardized documentation for CDS on ABS accelerated the trend.

The significant change is that risk aversion and risk assessments of CDO managers and CDO investors differed from those of the bond insurers and traditional investors, being less discriminating and selective in allowing high risk loans to be included in securitizations. Thus, with bond insurers and the traditional investors leaving the market, the setting of a limit on the riskiness of loans to be securitized disappeared. As a result restraints for securitizations got looser and lenders started to generate unreasonably risky loans in late 2005 and continued to do so into 2007. In fact, there was a clear trend of deteriorating sub-prime loan quality that starts in late 2005 and runs into 2007, see Adelson and Jacob (2007).

CDOs accepted ABS backed by unreasonably risky mortgage loans either because the CDO managers lacked the understanding, knowledge and experience of the structures or because they just didn't care since they did not bear the primary risk of their investment decisions. Practically, the investors in the CDOs were the risk bearers.

A picturesque description of the situation on the investors' side is provided by M. Adelson and D. Jacob:

"The CDO investors generally were not mortgage experts, but rather relied on modeling assumptions and Monte Carlo simulations as the main basis for judging the credit risk of their investments. Some CDO investors may not have fully understood the math and the assumptions behind the analysis. Some may have pretended to understand it in order to avoid appearing ignorant or unskilled in math. Some probably understood it and (naïvely) accepted it. In doing so, they ascribed mathematical properties to the underlying sub-prime mortgage ABS – default probabilities, recovery rates, and correlations – when they should have been focusing on the actual loans and on the lending process."

Since the typical mortgages business worked according to the originate and distribute model the greatest portion of the mortgages did not stay on the banks' balance sheets, but was pooled, securitized and transferred to the capital markets, to a significant degree facilitated by the ratings issued by the CRAs. The lack of a 'continuing ownership interest' reduced the originators' incentives to keep watch on the long-term quality of the assets.

Over 80% of the sub-prime securities issued were AAA. Many of the investors - global institutional investors, including hedge funds, just "bought" the needed top-ratings.

Because of the continuing fall in house prices refinancing became impossible with the refinancing market for sub-prime mortgages effectively disappearing in the third quarter of 2007. Default rates rose dramatically.

Another feature was fraud in mortgage market, but not the fundamental problem though. FBI was warning of an "epidemic" of mortgage fraud yet 2004. It reports that lenders initiated 80% of these frauds. The FBI identified the epidemic of mortgage control fraud at such an early point that the financial crisis might have been prevented.

8.5 Summary of the chapter

Undoubtedly the housing bubble in the U.S. which was pushed by the Federal Reserve's interest rate policy since 2000s can be considered reasons for the sub-prime crisis. Undoubtedly securitization in mortgage lending led to lax loan extension standards and the U.S: government sponsored entities further pushed the mortgage securitization bubble.

Various further reasons for spreading the sub-prime crisis over the global financial sector exist however. These are besides the principal agent problems already presented in the preceded chapter, also inadequate ratings for the highly complex securitization notes and primarily inadequate and largely shortsighted financial regulation in its entirety, which topics are treated in the following chapters.

9 Ratings and rating agencies

9.1 Introduction

As an introduction to the following section I refer to the "Hearings of the Committee on Oversight and Government Reform on "Credit Rating Agencies and the Financial Crisis", 22 October 2008.

A July 2008 investigation undertaken by the SEC ("Summary Report of Issues Identified in the Commission Staff's Examination of Select Rating Agencies") uncovered a wide range of conflicts. SEC found evidence that rating agencies were aware of the upcoming crisis of the CDO market but didn't disclose this or adjust their ratings in a timely fashion.

"*The current credit rating system was designed for failure, and that is what financial markets experienced.*

AIG, Fannie Mae, Freddie Mac, Bear Stearns, Lehman Brothers, Countrywide, IndyMac, MBIA, Ambac, Merrill Lynch, IatraMu, Ialachovia, and a string of structured finance securities all have failed or nearly failed to a great extent because of inaccurate ratings.

The ratings of the three companies, Moody's, S&P and Fitch, were a major factor in the most extensive and possibly expensive financial calamity in recent American history. The IMF has estimated financial loss from the current credit crisis at $1 trillion, but other estimates from knowledgeable sources have pegged it at twice that amount. Of course, there have been other contributing parties to this debacle, including some of the mortgage brokers, depository institutions, and investment banks, but there should be no doubt that none of this would have been possible were it not for the grossly inflated, unsound and possibly fraudulent ratings provided to both the asset-backed securities directly issued as well as companies which dealt in these securities, whether it be originating, aggregating, financing, securitizing, insuring, credit enhancing or ultimately purchasing them.

Issuers paid huge amounts to these rating companies for not just significant rating fees but, in many cases, very significant consulting fees for advising the issuers on how to structure the bonds to achieve maximum triple-A ratings.

This egregious conflict of interest may be the single greatest cause of the present global economic crisis. This is an important point which is often overlooked in the effort to delimit the scope of the across-the-board failures of the major credit rating firms. This is not just a securitization problem.

The credit rating industry is a $5 to $6 billion market with these three companies, S&P, Moody's and Fitch, controlling more than 90 percent of the market. With enormous fees at stake, it is not hard to see how these companies may have been induced, at the very least, to gloss over the possibilities of default or, at the worst, knowingly provide inflated ratings.

Investors want credible ratings. Issuers on the other hand want the highest rating possible, since that reduces funding costs. Under the issuer-pay business model, a rating agency which does not come in with a highest rating will before long be an unemployed rating firm. It's that simple. And all the explanations and excuses cannot refute this elementary truth."

Credit Rating Agencies (CRAs) account for different significant problems which I address in this chapter without exhausting the list of potential issues.

In essence, the internationally recognized credit rating agencies (de facto only the big three: Standard & Poor's, Moody's and Fitch) accounted for the ratings of the highly complex

structured finance products, and in particular securitization notes. CRAs gained enormous power in recent years. It happened on the one hand through the outsourcing of assessing the credit quality of complex structured finance products by investors to CRAs, and on the other hand through the admission of their ratings for regulatory purposes[14].

In fact CRAs had practically a long-year expertise mainly on the rating for sovereign debt and private corporates and not on ratings for structured finance products. Especially through their admission for regulatory purposes, rating agencies have been given a semi-formal regulatory role, with their ratings determining the risk weights for assets to be invest in.

Under Basel II, CRAs can be considered External Credit Assessment Institutions (ECAI) allowing regulated entities, such as banks, to rely on their ratings instead of assessing the risks themselves. As a result, by granting AAA status to an investment, CRAs determine who invests in a security and even at what return. That semi-formal regulatory role of CRAs is one of the most troubling aspects in the financial industry and in national and international financial regulation.

For external investors, the quality of structured finance products has always been hard to impossible to evaluate. Pre-crisis, a trustful quality statement for this credit quality were the external ratings as guarantee provided by the big rating agencies.

According to Riddiough and Chiang (2003) rating agencies have played "a unique role" in developing and popularizing the market for securitization transactions among investors. The credit rating agencies were considered independent experts, with expertise in evaluating the asset portfolios and assigning subordination levels to the tranches. Investors and regulators trusted this delegated monitoring, and acted as if the understood the risk characteristics of securitization.

Credit ratings were a key input for investors in the valuation of structured credit products because ratings were widely believed to provide a common credit risk metrics for all fixed-income instruments. In particular, in cases where price quotations were not reliable or not available, the price of structured credit products was commonly derived from prices and credit spreads of similarly rated comparable products for which quotations were available.

Thus, credit ratings and rating agencies played a key role in the valuation of illiquid structured credit products.

9.2 Ratings for securitizations

External ratings enable a simple comparison of the credit quality of an issuer or an issue for the potential buyers of securities. In principle, the credit quality concerns the ability to meet interest and principal payment obligations completely and in a timely manner. Other types of risk differing from credit risk which are inherent for securitizations but were not adequately measured by CRAs, are discussed further in this chapter.

It is commonly acknowledged among banking practitioners that even corporate ratings are lagging in time, with their changes coming too late for valuation purposes or to help investors avoid losses if an issuer's credit rating weakens. Regarding structured finance ratings even further inefficiencies can be addressed. Such facts raised concerns if CRAs add enough informational value to justify their existence.

Ratings for securitization transactions are not based on the credit standing of an individual borrower (issuer ratings), but on the credit quality of the securities issued (issue rating). Inter-

[14] Capital Requirements according to Basel II and the European Capital Requirements Directive (CRD)

estingly, the rating for structured finance products itself per definition does not make any quantitative statements regarding risk.

The rating scales are also generally relative. Quantitative statements on risks in individual rating classes are made ex post, commonly by calculating the historical default probability for a certain class.

Even rating agencies confess that ratings simply present opinions on credit quality derived from certain quantitative and qualitative criteria. Thus external ratings are subjective estimates. As a result, it is possible that the same securitization papers issued could be assessed in different ways by the different rating agencies and thus be assigned different external ratings.

However, the main purpose of a securitizations' external rating is analog to ratings assigned to corporate debt instruments. From the investor's perspective, the primary function of a rating is the independent assessment of the risk associated with investing in a given capital market instrument. This issue presented an obvious discrepancy in the purpose of the supply and demand of the product "rating for securitization transaction".

9.3 Applying bond ratings to securitization notes

Mason and Rosner (2008) argumentatively reason that standard bond ratings were wrongly applied to securitization transactions. In the following section I present some of the main ideas from their analysis in order to provide some rationale to the crucial developments in securitization markets via the misapplication of corporate ratings to securitizations.

As Mason and Rosner claim, many of the recent difficulties in MBSs and CDOs can be attributed to the misapplication of ratings. The big three ratings agencies are often confronted with different conflicting incentives leading to subjective risk measurement. Another aspect is that the process of creating MBS and CDOs in practice requires the CRAs to become a quasi-"underwriter", which leads to even more conflicts.

In the next section I present a gap analysis of the fundamental differences between rating structured finance products - like the securitization notes MBS and CDOs - and traditional products like corporate debt. These fundamental differences were one of the causes for the great inefficiencies in MBS and CDO ratings.

Traditional corporate bond ratings have a long history of application and have been empirically tested through various economic cycles. Structured products have not.

Main characteristic of structured-finance rating analysis is its reliance on statistical models in contrast to the traditional rating process, which rely on empirical analysis. Thus the rating process for innovative structured products seems to have been hypothetical and not statistically proven.

According to BIS (2008)[15] "*the models used tended to be the models of the designers and sellers of the complex structures, who work for the issuers of the instruments. The potential for conflict of interest in the design and use of these models is obvious. In addition, even honest models tend to be useless during periods of disorderly markets, because we have too few observations on disorderly markets to construct reasonable empirical estimates of the risks involved*."

Rating agencies provide estimates of default risk, i.e. default probabilities and expected loss conditional on occurring default. Other types of risk were ignored in CRAs models.

[15] "Credit Risk Transfer", April 2008

Liquidity risk is significant source of price risk. However, as long as liquidity risk did not mutate into insolvency risk, it was not reflected in the ratings provided by CRAs.

The fact that many 'consumers' of credit ratings misunderstood the meaning of these ratings is not solely the fault of the rating agencies. This failure, however, does point to a problem that must be addressed. First, potential investors need to be better educated. Second, a separate rating or extended rating to incorporate other than default risks should be introduced.

According to BIS (2005)[16] – at least two years before the recent turmoil - the three major rating agencies were reported to claim "*all products they are asked to rate are subject to a common rating process…In addition, all ratings are ultimately mapped into an alphanumeric scale benchmarked to the historical performance of corporate bonds*". Such facts definitely express the inadequate reflection of market behaviour of credit risk transfer products in their ratings.

Another critical aspect, are the frequent changes to structured finance rating methodologies. Such changes unavoidably lead to inconsistencies in the application of the ratings criteria between new and existing structured-finance asset classes. Regarding the integrity of rating scales, Nomura argues in its Nomura Fixed Income Research (2006): *"...a rating system is most useful when each rating symbol has a constant meaning over time, geography, currency, and type of instrument."*

According to Authorite des Marches (2007) "…*In light of the constant flow of new innovative structured products, questions should be raised at the European level concerning the potential limitations of agencies' models - can everything really be rated? – and the meaning of ratings*."

In short, it was pre-crisis not clear that a structured finance rating is NOT equivalent to a corporate rating and, within securitization ratings, whether or not the rating of a cash CDO is equivalent to the rating of a synthetic CDO.

Post-crisis it is even clear that rating is not an adequate measure for the risk characteristics of securitization products. Logically, ratings also should not be considered appropriate for risk-weighting under Basel II.

One long acknowledged problem in rating methods for securitizations were correlations. Default correlations are higher during economic recessions and on a portfolio level, dependencies between defaults are crucial.

Nomura provides evidence that the performance of securities with the same rating varied across time, industry sector, and security type. Consequently, a BBB+ rating on a CDO meant something different from a BBB+ rating on a MBS, which in turn meant something different from a BBB+ rating on a corporate bond.

[16] See "The Role of Ratings in Structured Finance: Issues and Implications" (Jan. 2005), BIS, CGFS.

Fig. 32: Differences between corporate vs. structured finance products

Corporate debt	Structured finance debt
- Single asset, although there may be senior and junior debt which may have separate ratings	- Pool of assets as an obligation of a Special Purchase Vehicle (SPV)
- Usually long-term existing relationship between the CRA and management	- The sole objective of the originator is to maximise the borrowing against the underlying portfolio
- Ratings reflect a judgement on the overall 'business' risk and financial situation (leverage consideration)	- Leverage can range up to a maximum of 95% but remains unconsidered via ratings
- Management has the flexibility to respond to changes in the operating environment, e.g. raise new equity against credit deterioration which is not typical for structured finance	- Unlike corporate debt, where the rating is focused on whether the corporate would default or not, the rating focus in structured finance is on determining the likely total level of defaults and losses on the pool of assets
- CRA have industry specialists with extensive knowledge of the industry	- CRAs must address in some cases diversified risk in the underlying pool as part of the rating process
	- Concentration risk is another fundamental issue in the rating of structured finance, i.e. the extent of assets correlation and simultaneous default
	- Ratings are much more model-driven than corporate debt
	- The CRAs typically do not do any due diligence on the underlying SPV assets. Instead, they rely on the assurances and due diligence work by the originators and sponsoring banks.

Source: own presentation

The failure of rating agencies in providing adequate ratings was obvious since the beginning of the current financial market turmoil mid-2007.

9.4 The role of credit rating agencies

Since the creation of the modern credit rating industry by John Moody in 1909, ratings were offered to investors as a benchmark of comparability for assessing debt credit-quality.

However, rating agencies have always tried to define their role by stating that their ratings only measure credit quality. They state that a credit rating is not intended to capture the risk of a decline in market value or liquidity of the rated instrument, nor should it be considered an investment recommendation. However, the market did not understand this point.

According to a SEC Letter[17], "*because of the limited number of Nationally Recognized Statistical Rating Agencies (NRSROs) and requirements to investors to only invest in "investment grade" rated assets, CRAs move to rate newer asset classes – such as structured finance products - strengthened their market power (their "partner monopoly). Thus, the new structured finance products became a major growth opportunity for the ratings industry and a very significant proportion of its revenues.*"

[17] Letter from Sean J. Egan & W. Bruce Jones, to Jonathan G. Katz, Secretary, United States Securities and Exchange Commission

9.4.1 The quasi-regulatory role of CRAs

As the CRAs were relied upon for an approval stamp in the evaluation of structured finance products they gained with time a regulatory monopoly and practically regulator status. Credit ratings had tremendous influence on the valuation and liquidity of securitization notes. Their highest credit quality (AAA) ratings blurred investors' view regarding the threats coming up with sub-prime backed investments and related instruments like CDO MBS etc.

However, CRA are not to blame for the quasi-regulatory power they were assigned. One of the questions to ask is who assigned that quasi-regulatory power to CRAs?

In fact, quasi-regulatory power to CRAs was assigned conceptually by the international standard setters, e.g. BCBS, and in each concrete country by the national supervisors.

This requirement was incorporated in Basel II. According to paragraph 90 Basel II (June 2004) within the recognition process "*national supervisors are responsible for determining whether an external credit assessment institution (ECAI) meets the criteria listed in the Framework. The assessments of ECAIs may be recognized on a limited basis, e.g. by type of claims or by jurisdiction.*"

The granting of a "Basel II-eligible"-status to S&P, Moody's and Fitch allowed them to become de facto regulators of structured finance. In practice, Basel II pushed the businesses of CRAs at least (i) via the use of external ratings within the Standardized Approach, and (ii) via the capital rules for securitizations based on external ratings.

What was further required with the Basel II accord was to make public the supervisory process for recognizing ECAIs in order to avoid entry barriers to the rating industry.

However, this requirement is principally difficult to implement and was not even intended to be fulfilled regarding structured finance ratings.

Of course, making the national financial regulator responsible for the recognition and eligibility of rating agencies in the respective country is a prudent measure. However, I argue that with the currently set half-precise requirements and eligibility criteria of a very general nature, as stated further in this section, a great extent of subjectivity was introduced in the CRA recognition process. Furthermore, the lax and unconcrete eligibility criteria (see below), set also very tight requirements on the professional qualification of financial supervisors. Last but not least, potential principal-agent problems may occur between the CRAs and the national financial supervisor.

The eligibility criteria for recognizing ECAIs defined by paragraph 90 ff. Basel II are **Objectivity, Independence, Transparency, Disclosure, Resources and Credibility**.

Regarding Objectivity for example the national supervisor should assess the methodology for assigning credit assessments as "rigorous and systematic". Nothing concrete is set further in Basel II which makes the classification as "rigorous and systematic" a subjective matter.

Further on, the methodology should be subject to some form of validation based on historical experience. This requirement does not make sense if it refers to structured finance ratings since data histories are not sufficient and only limited informative after the financial turmoil.

"*Moreover, assessments must be subject to ongoing review and responsive to changes in financial condition. Before being recognized by supervisors, an assessment methodology for each market segment, including rigorous backtesting, must have been established for at least one year and preferably three years."*

Nothing of the above requirements was practically fulfilled referring to structured finance ratings.

What is my message?

Not only CRAs are to blame for the wrong ratings and the financial turmoil. The national supervisors in fact supported them to further establish their businesses and growing market shares via the lax recognition process and unprecise eligibility criteria defined in Basel II.

Another concern presents the eligibility criterion Independence.

According to Basel II "*An ECAI should be independent and should not be subject to political or economic pressures that may influence the rating. The assessment process should be as free as possible from any constraints that could arise in situations where the composition of the board of directors or the shareholder structure of the assessment institution may be seen as creating a conflict of interest*."

The numerous principal agent conflicts explained in the previous Chapter present a clear example that rating agencies were recognized for regulatory purposes despite long-acknowledged deficiencies in their remuneration schemes and various other principal-agent issues.

The required Transparency as an eligibility criterion according to Basel II also did not help make structured finance ratings more transparent. The reason for that is again that transparency was not properly addressed. Transparency regarding collateral, credit enhancement measures within a securitization structure and parties involved were not subject to transparency as defined in the revised Framework (see paragraph 91).

According to Basel II regarding Credibility, "*the reliance on an ECAI's external credit assessments by independent parties (investors, insurers, trading partners) is evidence of the credibility of the assessments of an ECAI*".

This can not be a criterion for credibility.

What should be done?

A separate recognition process with differentiated rating eligibility criteria should be introduced for structured finance products. I provide a schematic example in Chapter 13.

9.4.2 The service of CRAs – pro-active structuring

Originally rating agencies delivered an opinion of the creditworthiness of an issuer. CESR[18] (2006) highlights several areas where CRAs are either not, or solely questionably, in compliance with the "IOSCO code"[19] blaming them in not merely being publishers any more.

CRAs are meanwhile seen as an active part of the structuring of the deal. This naturally increases the risk to subjectively assess and misinterpret information in structured finance transactions. This was not typical for traditional ratings where a corporate can do little to change its risk characteristics in anticipation of an issuance.

[18] See, Committee of European Securities Regulators' (CESR) report on "Compliance of Credit Rating Agencies with the IOSCO"

[19] The IOSCO Code explains that "the CRA should adopt, implement and enforce written procedures to ensure that the opinions it disseminates are based on a thorough analysis of all information known to the CRA that is relevant to its analysis according to the CRA's published rating methodology."

This was also explained by BIS (2005)[20] long before the recent crisis: "*What distinguishes the rating of structured finance transactions from the rating of traditional instruments is that the former requires the rating agencies to be involved in the deal's structuring process…Deal origination involves obtaining implicit structuring advice by the rating agencies, at least to the extent that arrangers use rating agency models to pre-structure deals and subsequently engage in an iterative dialogue with the agencies in order to finalize these structures. As a result, ratings of structured finance instruments have a decidedly ex ante character."*

In short, CRAs sell both - advisory services and ratings to the same clients. This incorporates (i) selling advice to a client on how to structure a deal so as to obtain a desired rating and (ii) in a next step, the rating itself designed according to CRAs own advice.

This function of CRAs however can not be avoided. It will be always covered by CRA or advisory company. The only possibility to escape this role is to get away from the ratings, e.g. to find another useful measure for credit quality of structured finance products.

According to Kane, the quality of CRA analysis was and is undermined by CRA efforts to avoid legal responsibility for any mistakes. Although CRAs play a crucial role in designing securitizations, they state only to express an "opinion." CRAs regularly incorporate a defensive passage in their "opinions" stating that it is "unreasonable" for anyone to rely on their "mere opinions" and they should not be considered "investment recommendation".

However, the high fees for CRAs' opinions on risk quality in securitizations, invalidates the claim that users should not rely on their ratings. The reliance on CRAs ratings is not only indisputable. Instead, CRAs should share responsibility with originators and insurers of the deals who failed to verify the analysis on which CRAs' "opinions" were based.

9.4.3 Outsourcing risk assessments for securitization transactions

According to BIS (2003)[21] *"…rating agencies are more important for structured finance than for traditional debt instruments. ….. factors at play: the rating agencies' role in modeling the risks of complex structured finance instruments; their key role in deal structuring; and a clear information advantage, in particular over less sophisticated investors*.." Thus, the increased investor demand, the lack of transparency, history and available data accompanied by extreme complexity of the new products further increased the reliance on the CRAs.

What should be asked in the context of the above cited insights from 2003 is, why BCBS continued to develop the ratings-based Basel II Securitization Framework instead of widening warnings and prohibitive recommendations regarding structured finance ratings.

This should be seen as a clear regulatory failure.

With the CRAs' involvement in the pre-issuance structures of securitization deals, defining the collateral and, implying appropriate yields to tranches of structures are they well suited to offering products that value securities, in the secondary market which they may have rated at issuance.

According to BIS (2008)[22], "*Some investors appear to have entered the market despite lacking the capacity to independently evaluate the risks of complex Credit Risk Transfer*

[20] See BIS report "The Role of Ratings in Structured Finance: Issues and Implications"

[21] See "Incentive Structures in Institutional Asset Management and their Implications for Financial Markets", March 2003

[22] See BIS report "Credit Risk Transfer",2008

products. These investors appear to have done little independent risk analysis of CRT products beyond relying on the rating."

9.5 Rating shopping

Solely for completeness, in this section I describe the phenomenon "ratings shopping".

Ratings agencies have long been criticized for their compensation structure encouraging overestimation of credit quality and thus leading to overstated ratings. Securities issuers themselves pay for ratings, but they pay the agency not before the rating is completed. The explosion of sub-prime MBS and CDO issuance has resulted in a growing share of the credit rating agencies' income coming through the rating assessments of these products.

The issuer orders a rating assessment and delivers all the necessary information required by a CRA but it is still his own decision weather to publish or not the assigned rating. Once the rating assessment is completed, the CRA notifies the issuer. The issuer chooses to accept the rating and make it public or not. The credit rating agency is only paid if a rating is issued. However, break-up fees are commonly contracted. It means that once the final decision is met, the CRA has incentive to ensure that the rating is issued and published and CRA is paid.

Structured finance issuers request the agency to provide prospective assessments on a deal before deciding which CRA to engage for the final assessment. Normally issuers seek prespecified ratings for the various tranches. The CRA indicates whether or not the specified assets and structures achieve the desired ratings consistent with the methodologies of the CRA. If issuer's proposed assets and structures do not meet the credit requirements of the CRA a rating agency does not rate the securities. Normally in this situation another CRA concludes that the desired ratings do meet their credit requirements. As a result issuers "shop the ratings", i.e. accept the most favourable ratings.

This conflict of interest encourages agencies to provide higher ratings in order to gain business. According to IOSCO, some agencies lost market shares (for rating CMBS) by adopting more conservative assumptions in reaction to the turmoil of the market.

For enabling investors to conduct their own independent analysis, IOSCO has recommended measures to combat ratings shopping, such as encouraging structured finance issuers to disclose relevant information[23]: "… *publish verifiable, quantifiable historical information about the performance of its rating opinions, organized and structured, and, where possible, standardized in such a way to assist investors in drawing performance comparisons between different CRAs*". Identical proposals came as well from the SEC.

These proposals aimed at the lack of transparency accompanying ratings industry.

In order to have a functioning market, participants should be given information allowing them to determine the informational value of ratings.

9.6 Summary of the chapter

CRAs undoubtedly blurred the perception of inherent credit risk in securitization products by assigning wrong ratings. It is difficult to assess what was the leading underestimation factor: the flaws in rating methodologies or the principal agent conflicts on CRAs side.

One is nowadays clear: new regulation and strong oversight analogous to financial regulation and supervision must be urgently introduced to the credit rating industry.

[23] IOSCO, The Role of Credit Rating Agencies in Structured Finance Markets, (May 2008)

10 Basel II

10.1 Overview of the chapter

Everybody trying to defend the capital rules of Basel II presents them as "increased risk sensitivity for capital requirements". In this chapter I argue that this perception of regulators and standard setters might be wrong. Not least after the financial turmoil starting 2007, which turned to be evidence for the flaws in Basel II.

Especially during and after the financial crisis it became obvious that there were serious uncertainties about valuation, regulatory treatment and disclosures of structured finance products and in particular securitizations. Further on, a significant issue is the capital treatment and risk management measurement for counterparty risk. As a result of the obvious uncertainties related to securitizations, the pre-crisis perceived benefits of securitizations became questionable, and even more, it became clear that structured finance credit risk transfer products increased systemic weaknesses and exacerbated crisis' consequences.

At the beginning of this chapter, I provide some background on the existing risk-based capital rules according to Basel I and Basel II. This is necessary for the readers of this work who are not experts on the field of banking supervision and calculus for capital charges. In this context, I only present the existing capital requirement rules without own scientific or other contribution to the topic.

In a next step I present the major shortcomings in Basel II which, in my opinion, got evident during the phase of implementation of Basel II as well as after the financial crisis. Of course it would be wrong to blame the Basel II Framework for all the non-captured economic deficiencies during the recent financial crisis. The Basel II rules came into force on 1 January 2008 in the EU and are applicable from 1 April 2010 for the U.S. However, there are numerous shortages in Basel II, especially with regard to structured credit products and securitization, so I do address them in my dissertation work.

In analyzing the flaws I first concentrate on some general shortcomings. This part of the chapter should be viewed as my own further development of partially existing critiques of the Framework. Thus, my contribution to this field was expired by existing analyses which I further develop according to my own experience.

10.2 Background Basel I and Basel II

Calculating of capital charges have long been a central element of banking supervision. The Basel Capital Accord of 1988 - Basel I - established the common framework for measuring capital and setting the minimum standards for international banks.

The calculation of minimum regulatory capital is in practice risk-weighting of the bank assets. The rules require for a bank to hold capital of at least 8 percent of the total risk weighted assets, i.e. weighted by individual risk weights according to the credit quality and risk substance of the assets.

According to Basel I the assets were grouped in very crude risk categories. For example, all corporate loans received the same weight. Since in such a case the large differences in credit quality of borrowers were practically not considered in the capital charges, the Basel I regulatory measure of risk was practically inadequate regarding the factual risk of the underlying borrower.

For the above reason, the Basel committee revised the original Framework in June 2004 and brought the revised Framework - Basel II[24] - to life.

In theory, Basel II refines Basel I measure of bank capital and sets further rules on bank supervision and transparency. The major change, introduced by Basel II, is the greater risk-sensitivity in measuring capital charges, via considering probabilities of default, losses given default and exposures at default for the individual assets.

Critiques on different single issues in Basel II have long been expressed. After the financial crisis some single voices even tried to reject Basel II as a prudent regulation standard.

Defending the Framework, Klaas Knot - chair of the Basel Committee's risk management and modeling group[25] - says that Basel II should be given a chance to work before being written off. "…..*The crisis took place under the old Accord. So let's not rush things and blame the new Accord, which we strongly believe will make banks more resilient to these types of shock in future and will also help strengthen supervision*," he says.

Against the opinion and inflated speeches of standard setters such as the above citation, I strongly believe that the new Accord would not have prevented the crisis. Particularly the securitization products such as mortgage backed securities were the means for spreading the securitization risk and the crisis from its origin in the U.S. all over the financial world. At the same time, the development of capital rules for securitization products was knowingly prolonged for years and at least for that reason firstly missing and secondly not adequate.

Basel II may have improved some aspects of Basel I. However, it still raises same and regrettably even new concerns, which topics I address further in this chapter.

10.2.1 Objectives of the Basel Accords

It is crucial to note that the key objectives of both Accords were different. The old Accord (Basel I) was intended to "*level the playing field"* for competition between internationally active banks regulated by different supervisory regimes by means of regulatory costs. It means that its key objective was to eliminate the cost advantages of banks subject to more leisure banking regulation. A further objective of the old capital rules was financial stability.

The new Accord (Basel II), in contrast, is mainly aiming at financial stability and soundness.

10.2.2 Assessed risks

In this context, Basel I addresses two categories of risk. The original risk category (and the central concern of Basel I, the 1988 Accord) is credit risk. Credit risk stems from traditional banking. This is the risk that borrowers will not be able to pay their duties in full amount or in a timely manner which can lead to liquidity or solvency crisis for lending banks. Credit risk was thought to be typical for the Banking Book.

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[24] The Basel II Framework comprises of:
• Basel II Framework: *International convergence of capital measurement and capital standards: a revised framework,* June 2004
• Unrevised elements of the 1988 Basel Accord such as *Amendment to the Capital Accord to incorporate market risks,* 1996
• *The application of Basel II to trading activities and the treatment of double default effects,* July 2005
Bullet points 1 and 3 above were combined into Basel II - a revised framework, comprehensive version, June 2006.

[25] Klaas Knot is also director of supervisory policy at De Nederlandsche Bank.

The second Basel I category is market risk including interest rate risk, equity risk and, according to some specific explained in the nest section, currency and commodity risks. Market risk is thought to be typical for the Trading Book. Further details are explained in the next section.

Basel II, in contrast, addresses three categories of risk: credit risk, market risk and operational risk. The Credit Risk Concept in Basel II is totally different from that one of Basel I, which I further explain in the next sections.

10.2.3 Background capital components

Capital has two components. Tier 1, known as core capital, consists of equity capital / common stock and disclosed reserves, such as those from retained earnings. Tier 2, known as supplementary capital, consists of perpetual cumulative preferred shares and subordinated debt with long maturity (more than five years).

Total capital must be at least 8 percent of risk-weighted assets. Core capital must be at least four percent. Under Basel II and in some countries under Basel I (Germany), banks may also employ the so called Tier 3 at national authority discretion, consisting of short-term subordinated debt.

10.2.4 The distinction between “banking book” and “trading book”

The Basel Accords (Basel I and Basel II) make the distinction between the “banking book” and the “trading book”.

As an ex-course I introduce a very general definition of the distinction between the Banking and the Trading Book: Assets generally held to maturity (the traditional way) are assigned to the banking book while assets held for trading purposes with a short maturity belong to the trading book.

The experts in banking regulation will know the further details with regard to this distinction.

10.2.5 Trading book background

The trading book capital requirements were traditionally focused on market risk as opposed to credit risk, which is in general the focus of the banking book capital requirements. The market risk capital rules required up to date computing capital charges for the components “general risk” and “specific risk”. Market risk includes in a first step interest rate risk and equity risk. Additionally, if relevant, commodity and currency risk have to be calculated for market risk positions.

Specific is that both - commodity and currency risk – although considered market risks have to be calculated for all banking positions (trading and banking book). Furthermore, commodity and currency risk are not divided into the components “general” and “specific” market risk.

With regulatory approval, banks were allowed up to date to calculate the capital charges for market risk either by a standard approach or by a value-at-risk (VaR)-approach using internal models. The VaR capital requirement is an estimate of the maximum position loss for a given holding period at a certain confidence interval. Currently, the holding period is 10-days, and the confidence level 99 percent.

Specific risk presents the market value changes due to factors other than broad market movements. Components of specific risk are among others idiosyncratic variations but also event, default risk as well as jump-to-default risks. Banks can also use internal models to determine specific risk.

The combination of standard approach and VaR-approach is permitted. Thus, many banks calculate general market risk by means of VaR-measure and specific market risk via the standard approach.

10.2.6 Banking book

10.2.6.1 Basel I

For computing risk-weighted assets, the on-balance-sheet assets and off-balance-sheet items were assigned four different degrees of credit risk via risk weights of zero, 20, 50 or 100 percent. For example, claims on central banks denominated in national currency were assigned a weight of zero since they count as risk free. Mortgage secured loans were assigned a weight of 50 percent, while corporate loans had a weight of 100 percent, independent of the risk of the single borrower.

Off-balance-sheet activities were first converted via credit conversion factors and then received an appropriate risk weight.

10.2.6.2 Basel II

As presented at the end of section 10.2.2, Basel II addresses three categories of risk: credit risk, market risk and operational risk.

The Market Risk Concept in Basel II only slightly differentiates from that of Basel I. The Operational Risk Concept is completely new.

The Credit Risk Concept in Basel II aims at capturing the "same credit risks" as Basel I though based on new approaches. Credit risk in Basel II has two important parameters: the probability of default and the magnitude of loss given default.

The revised Framework (Basel II) is based on two approaches. The standardized approach assigns risk weights according to external ratings delivered by the credit rating agencies (CRA). The internal-ratings-based (IRB) approach can be a simpler one - the Foundation IRB, and a comprehensive one – the Advanced IRB. Main parameters of both approaches for calculating the risk weights are the probability of default, the loss given default, the exposure at default and the maturity of the asset.

Under the Foundation IRB banks compute their own estimate for the probability of default, while the other three parameters are set by the revised Framework (the Basel Commission). Under the Advanced IRB banks compute their own estimates for all the four parameters according to their own internal models.

In addition to the described three risk categories a completely new Securitization Framework was introduced with Basel II which regulates the capital treatment of securitization activities. The Securitization Framework mainly sets own rules for the treatment of securitization and partially relates the capital charges for securitizations to the requirements for calculating the charges for the other three risk categories. The single approaches and methods referring to securitization are presented in Chapter 11.

10.3 General critique on Basel II

Basel II has often been criticized by now. Most of the up-to-date criticism was focused on technical and methodological shortages. With the new understanding after the financial crisis started 2007 some new shortages in the current version of Basel II must be attacked.

What turned obvious during and after the financial turmoil is that capital regulation failed to reach its main goal - ensuring stability of the financial system. It failed despite the "regulatory achievements and improvements within Basel II" elaborated over the past ten years. In practice, Basel II turned to do little to make the financial system more resilient. The need for further revisions in banking regulation is currently more than obvious.

The common belief is that Basel II aimed at improving the shortages in the Basel I Accord by better calibration for credit risk and by developing calculation methods for reflecting other risks (such as operational risk, securitization activities) in the regulatory capital. For example, under Basel II large banks, being perceived as those with advanced risk management systems, are allowed to use their own models for computing their regulatory capital. However, after the financial turmoil it became obvious that the applied internal risk models greatly underestimated risk, forcing every financial house nowadays at least to reprice its risks (if not to go bankrupt).

10.3.1 One problem with securitizations - credit risk in the trading book

The traditional belief that credit risk is most relevant to the assets held in the "Banking Book" does not hold any more.

The traditional belief that the main risk in the Trading Book is market risk and market prices reflect product losses does not hold any more as well.

However, the current Framework was established based on these assumptions. The high lightening of the above both facts means that at least the current capital rules for Trading Book are not adequate any more.

The clear demarcation of market from credit risk is largely blurred within securitization products via the credit risk transfer. This was regrettably recognized after the crisis.

For example, the new rules of Basel II turned to not capture the risk of securitization transactions. Generally, credit risk transfer products are complex and much faster developing than the capital requirements rules can be developed altogether.

Generally the Basel II rules might be adequate as long as banks can deliver meaningful estimates by their internal models. This is not proved yet. Furthermore, in the case of new complex products such as securitization instruments for which little reliable historical data exist, the rules for banking supervision obviously completely failed to accurately reflect underlying risks.

The rules for computing capital charges based on external ratings practically allowed, financial institutions and firms to employ less capital for loss reserves in all the cases of highly-rated debt, such as U.S. mortgage-backed securities. For this reason, the sub-prime mortgage crisis caused even more problems for non-U.S. financial institutions and firms although at the beginning of the housing crisis in the U.S. it seemed threatening only for the U.S. market participants.

On the other hand, the standard setters gave through Basel II enormous power to particular Credit Rating Agencies. Both single reasons and their combination are, besides other structural problems, undoubtedly significant causes for the financial crisis.

10.3.2 The problem with ratings

10.3.2.1 External ratings

Through the enormous power assigned to credit ratings Basel II practically helped banks (or even forced banks) to shift towards good rated securities in order to reduce their regulatory costs.

Additionally, setting the risk weights solely upon reliance on external ratings produced by CRAs in the Standardized Approach is a potential source of more pro-cyclicality in bank lending.

The most highlightening example for understanding these shortages are the external ratings for securitizations.

In fact, Basel II pushed the businesses of CRAs (i) first, via the expectation of the implementation of the Standardized Approach, (ii) second, via the capital rules for securitizations based on external ratings since the internal approaches for securitizations are in many cases too complex to be implemented, and (iii) third, via the increased capital arbitrage opportunities due to the prolonged finalization of the Securitization Framework and the inadequate treatment of credit risk transfer products in the trading book.

10.3.2.2 Is there a problem with internal ratings as well?

While the shortcomings referring to external ratings and the power given to CRAs as determinants for the capital risk weights stem mainly from the Standardized Approach (some exceptions exist though), a similar problem, with setting the risk weights, must be admitted also in the Advanced Internal Rating Based Approaches (AIRB).

In particular this refers to the Probability of Default (PD) as a determinant for the risk weights in IRB. The problem with the internal approach is that the PDs, estimated by banks themselves, are based on historical data, which is partly of a general kind for a specified asset category and partly specific to an individual institution for this specified asset category. This, however, unavoidably contents pro-cyclical features.

Mortgage instruments are after the crisis a perfect example of that potential shortage. Mortgage PDs are based on a housing boom in good times and thus being unsuitable to adequately predict probabilities of default in bad times, or for extreme risk.

Conclusion of the section

In short, there exist some inconsistencies with setting the risk weights in Basel II in both approaches (Standardized and IRB). This even leads to opportunities for capital arbitrage, for example such as in the case of exchange traded equity derivatives. This issue is however beyond the scope of this work which concentrates on securitization and similar credit risk transfer products.

In fact, the recent financial turmoil showed that the two key inputs into Pillar 1, the ratings provided by the rating agencies and the internal risk models of the banks, are both deeply flawed.

10.3.3 Résumé

The process of securitization undoubtedly revolutionized the global credit market. Asset securitization enabled the transfer of risk from mortgage lenders to investors through MBS. However, the regulatory regimes governing this market had lagged severely behind its eco-

nomic growth, leaving both investors and the global economy vulnerable to manipulation and potential economic disaster.

The financial turmoil, which caused many banks to suffer significant losses, must be taken as an indicator of great deficiencies in the Regulatory Capital Framework Basel II. The usefulness of the Basel II Accord is nowadays, unfortunately too late, more questionable than ever.

Despite criticisms and obvious failures in the Framework, in particular referring to securitizations, calculations of capital charges for securitizations via external ratings, the inadequate treatment of securitizations and related credit risk transfer products in the trading book and failed ICAAP measures (internal capital adequacy assessment process) according to Pillar 2 (Supervisory Review Process), standard setters and fellows from the international regulatory bodies, try to still show confidence in Basel II.

Klaas Knot, chair of the Basel Committee's risk management and modeling group, says that Basel II would have helped dampen the liquidity crisis had it been in place at the time: "*We shouldn't expect that regulation alone can prevent such things from happening, but I think the problems we saw emerging would have been tackled earlier and therefore the effects would have been less severe. I know there will never be a perfect answer to these situations, but I'm confident Basel II is a better answer.*"

It is normal and even expected that such professionals and quasi-professionals deliver inflated speeches regarding the usefulness of Basel II. The reason is, they devoted years to discussions and bureaucratic communication in order to develop and set the high complex capital rules in the Framework and accompanying regulation documents. However, the facts speak against the usefulness of the Framework.

Some economists started to call for the review of the new capital rules even before they have been fully implemented. In my opinion, such a review would have been the better way to save the implementation costs and concentrate on understanding the new banking operations, new banking products (innovation) and the new developed quasi-banking participants in the financial place, such as hedge funds and asset managers, instead on developing mathematical rules for computing unreal buffers against expected losses from high complex banking deals which neither investors nor regulators understood.

It is time to ask if the developments in Basel II are the right way of banking regulation and supervision. Are the capital ratios calculated as a relation between risk-weighted assets and bank's equity the right way to supervise banks?

These questions arise at least when financial stability and soundness are still the intended objectives and believed to be ensured through Basel II.

With the development of both Accords capital ratios became the center of banking regulation. However, capital ratios are obviously not enough as a measure for a systemic financial stability.

Setting capital levels solely provides an indication beyond which losses must be absorbed directly from capital. Thus, the particular capital ratio only provides a predefined level of capital protection.

With the development of financial innovation and the increasing number of countries implementing the Accords it became first obvious that Basel I had significant shortcomings and needed a further refinement. The same holds however also for Basel II. After the financial turmoil started mid-2007 numerous shortcomings of the "new" Accord became obvious. These can be theoretically enhanced via further refinement of Basel II. But it does not change the means by which these Accords regulate – the capital ratios. Before investing further ef-

forts in refinement of Basel II and subsequently in the implementation of these refinements, it must be understood that the single capital ratio can not be a reliable measure for banking regulation.

In this context, it is worth noticing that Pillar 2 (Supervisory Review Process, SRP) referring to the internal capital adequacy assessment process (ICAAP)) and Pillar 3 (Market Discipline) are very useful concepts for banking regulation if implemented properly.

This means that the future effort for improving banking regulation and achieving financial system robustness should be concentrated on enhancing the requirements of Pillar 2 and Pillar 3 and on their proper implementation.

My field of research in this work is securitization. For that reason I will adhere to critiques of the Framework mostly dealing with securitization activities, credit risk transfer products and, partially similar products such as credit derivatives, in the next sections. I will not develop a critique on the risk assessment concepts in Basel II only because it is out of the scope of this work.

10.4 Securitization-related completely missed topics in Basel II

As an introduction into this section I claim that some hot topics like securitization techniques, structured finance and credit risk transfer activities were not addressed in the necessary detail, if at all, in Basel II.

10.4.1 Securitization-related credit derivatives

Securitization-related products such as Credit Derivatives on Securitization Underlyings, for example Credit Default Swaps on Asset Backed Securities (ABS CDS) were not even thought of in the revised Framework.

The demarcation between basket credit derivatives and credit derivatives on securitization underlying such as pools of SME loans is missed as well (this topic is treated in Chapter 2 in this work).

Currently broadly used securitization-related credit derivatives like Principle Protected Swaps and Principle Protected Notes are not even mentioned in any plausible definition of a credit derivative or securitization transaction in Basel II.

For the purposes of this work, these products were explained in Chapters 2 to 4. If one accepts the excuse that the above mentioned securitization-related credit derivatives were too innovative and too complex to be properly defined in the revised Framework in a timely manner, there is no excuse for the superficial presentation of capital rules for non-securitization related credit derivatives. The problem is explained in the following section.

The Framework sets some capital rules for n-to-default credit derivatives. These are multi-name (or basket) credit derivative, which stop to exist when the n-th borrower in the basket defaults (presented in Chapter 2).

However, in practice there exist numerous types of linear (pro-rata) baskets in which the credit derivative does not stop to exist when a borrower in the basket defaults. Every default just reduces the originally signed notional of the credit derivatives. All standardized index credit derivatives, such as iTRAXX and CDX, are of the type linear or pro-rata baskets (see Chapter 2). Numerous credit derivatives referring to linear tailor-made baskets were developed as well. These are not even mentioned in the Basel II Framework.

The Framework provides not a single word regarding multi-name credit derivatives on linear baskets and securitization underlyings. This failure led, at best, to inefficient long-lasting interpretation rounds within financial institutions.

This is an obvious failure in the Framework because the bright interpretation of these products with regard to their demarcation leads to great uncertainties in their treatment with regard to the capital charges they must be subject to.

These products and their capital treatment should have been defined if not in the Framework itself, at least in a separate supporting document in order to clarify their demarcation from "standard" credit derivatives on non-securitization underlyings and in a next step for setting their treatment for regulatory capital purposes. The development of such new and complex products was faster than the standard setters, who prolonged the establishment of the securitization framework for years although the market for securitizations and securitization derivatives was flourishing.

Another misleading Basel II rule concerning basket credit derivatives is the reference of their capital charges to the risk weights for securitization tranches in the case of available external credit assessment from an eligible credit assessment institution for the product.

Conclusion of the section

The point of my critique is as follows: first, the demarcation between these products is missing in the Framework. Second, credit derivatives themselves do not possess external credit assessments. Eligible credit assessment institution rate actually the underlyings on which credit derivatives refer.

Concluding, what has been intended with the Framework requires at best a meaningful interpretation.

10.4.2 Liquidity risk and interaction between different types of risks

Standards aiming at managing liquidity risks, which risks are also typical inherent risks in securitization notes, were addressed via Basel II, however on a very general and unconcrete level.

Furthermore, the turmoil showed the close interplay between credit risks, and market and liquidity risks hidden in tradable credit risk transfer products. The change in price of any of these risks, often led to change in price in all three types of risk. This increased the interaction between volatility in the three markets. This in turn connected financial markets with economic activity and credit availability in an unhealthy way.

In fact, securitization and securitization related credit risk products merely transform credit risk into market risk by pooling the untradeable assets and issuing tradable securities backed by the original asset pool. Mainly for the reason of this transformation of one risk type into the other securitization techniques have long been considered a useful risk management and funding tool.

However, Basel II did not consider any of these critical issues.

10.4.3 Counterparty risk

A failure in the revised Framework which unfortunately became obvious after the financial turmoil is the methodology for calculating counterparty risks for financial derivatives. The current exposure method (CEM), also known from Basel I, turned to not adequately reflect counterparty risk. The new method via Internal Models for Calculating Counterparty

Risks proposed in the Trading Book Paper[26], presents as well a wild mix of highly complex formulae without a prove or even hint of reasonability and adequateness.

In particular, the counterparty risks resulting from securitization related derivatives in not adequately reflected via the current capital regime.

10.4.4 Résumé

In the following graphic I summarize some of the missed topics in Basel II related to securitization which I explained in the preceding sections.

Fig. 33: Missed topics in the Basel II rules

Problem in Basel II such as missing or incomplete rule	Details
Demarcation of synthetic securitization to basket and / or tranched credit derivatives leading to unclear regulatory treatment of these structures and inadequate capital charges	**Linear Basket Credit Derivatives** Indices (iTRAXX) Tailor made baskets Etc. **Basket Credit Derivatives on Securitizations** ABS, MBS etc SME Portfolios **Protected Principle** Principle Protected Swaps Principle Protected Notes
Counterparty risk not adequately addressed	**Credit Derivatives on Securitizations** The **Current Exposure Method** (CEM) not adequate
Liquidity risk not adequately addressed	**The interplay between credit and market risks** in securitization products **Market liquidity** of securitization products

Source: own presentation

Since the implementation of the revised Framework was accompanied by enormous implementation costs it is naïve to think that Basel II can be stopped. However, after the financial turmoil it gets more and more questionable if the original objective of Basel II - ensuring financial soundness and stability – can be reached via the defined methodologies.

In fact, the desired objectives and intended effects of Basel II were already overdue by the time of its implementation.

10.5 Lag behind financial innovation due to complexity and bureaucracy in Basel II

The Basel Committee of Banking Supervision (BCBS), situated in Basel, Switzerland, proved with time that the development of both Accords was driven by great bureaucracy. Particularly the elaboration of Basel II rules took more than ten years and painfully protracted the originally thought time framework for the discussion process. Representatives from member nations regularly met to discuss risk management solutions aiming at financial stability. Initially, the completion of the consultation process and the finalization of the Framework were set for 2002, with implementation in 2005. In fact, the Framework was finalized in 2004, with

[26] The application of Basel II to trading activities and the treatment of double default effects, July 2005

a separate Trading Book Paper issued one year later – 2005, and the compulsory implementation for the member countries was set for 2007 and 2008.

The result of the long-lasting elaborating process is a highly complex Framework associated with unreasonably high implementation costs.

The complexity of the Framework turned to be a challenge for its users. Thus, on the one hand the professionals dealing with the capital rules in (i) banks and (ii) software companies delivering the calculation software for complying with capital rules, and on the other hand (iii) supervisors, regulators and advisors validating the methods, were forced to develop and steadily update their qualification regarding Basel II. This includes mathematics, statistics and not last difficultly understandable lawful language of the Framework.

In many cases, the regulator, sent by the national regulatory authority, like BaFin in Germany, who practically entered a bank to inspect, validate and to sign for the methods used, had to firstly learn from the banking professionals what is the product to be capital charged.

A further challenge is that the Framework left a very bright interpretation spectrum. This fact places extremely high requirements on qualification and professional judgment of the users involved - bankers, supervisors, consultants and even software providers – to set the definitions, demarcate the products and apply the relevant Basel II capital rules (if available or applicable altogether).

In short, since the financial products steadily developed and, along with it the financial innovation got practically beyond reasonability in recent years, very high qualification requirements were placed on users in the financial sector with the introduction of Basel II.

The example in section 10.4 regarding credit derivatives and securitizations, is only one from many others. There exist different practical examples regarding the missing clear definition and demarcation of capital market products[27] beyond credit derivatives, such as equity positions, collective investment undertakings, and others.

Such failures forced the establishment of numerous bureaucratic working groups and interpretation committees involved in inefficient long-lasting bureaucratic discussions for the purpose of interpretation of the regulatory treatment set with Basel II.

One further example of the unreasonable Basel II bureaucracy represents the Securitization Committee in Germany (ABS-Gremium zum Arbeitskreis Basel II) which was established to interpret and explain the partially unclear and partially incomplete securitization rules in the revised Framework and their practical application.

After years of discussions and interpretation meetings, after elaborating numerous interpretation notes and protocols as documentation of the results from these discussions, in 2008, four years after publishing the final version of the revised Framework, the Securitization Committee in Germany had not decided yet if it appears reasonable to calculate capital charges for counterparty risk in basket credit derivatives referred to securitization underlyings, e.g. baskets comprised of small and medium enterprise (SME) loans and put the responsibility to banks owning such products to independently classify them as guarantee thus implicitly avoiding the capital charges for the underlying risks.

Such a result not only led to numerous further discussions, useless protocols and further consultative costs. Some Committee's members still insisted in 2008 on the need for further discussions. All this happened despite of the clear picture of the already started financial crisis and the numerous threatened or bankrupt counterparties in the banking sector. Thus, for ex-

[27] The same holds also for non-capital market products, which is beyond the scope of this work.

ample, in 2008 the leading securitization institute in Germany did not capital charged the counterparty risks in the above credit derivatives (credit default swaps - CDS on SME loans).

Such failures should not have been allowed by the regulator. In fact, they are a result of unclear and insufficient interpretation-demanding regulation.

Such a result may not have been intended by the Basel Committee of Banking Supervision. However, the extremely prolonged process for establishing a Securitization Framework, combined with the partially incomplete or missing concrete rules for complex securitization-related financial products, along with the permanent development of financial innovation, enabled the flourish of capitally uncharged risks.

In short, great inefficiency and bureaucracy came along with the growing complexity of the Capital Requirements Framework.

Additionally, the tight qualification requirements placed on everybody coming in touch with Basel II might be viewed as a mere measure to employ human capital instead of a meaningful way to calculate capital buffers against losses in banking. Parallelly, the partially missing qualification within market participants led to further increase in inefficiency and bureaucracy.

Through the rush development of the credit risk transfer products – credit derivatives, securitization activities and structured finance products, these products remained in practice to a great extent out of the scope of the Capital Framework.

The complexity of Basel II refers to the technical detail and methodologies set for certain types of banking products. However, the banking products changed faster than the Framework was developed. The banking model changed as well. For example the traditional banking model of holding loans on the balance sheet up to maturity was transformed into the fashionable model "originate-to-distribute". The development of the latter was even facilitated by the revised Framework.

All these changes in the financial market allowed for great capital arbitrage opportunities for banks using financial innovation.

As a result, through the high bureaucracy and complexity which was introduced with Basel II and the resulted lag behind financial innovation due to these two factors, the Accord to a great extent became obsolete shortly after its finalization and almost before its practical implementation.

10.6 Critique on operational risk rules with focus on securitizations

10.6.1 Background

According to paragraph 644 Basel II (June 2004), "*operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk.*"

Thus, operational risk includes all factors interrupting banks operation like fraud, incompetence, interruption of energy supply, fires, collapse of communications, and the like.

According to the Framework there are three approaches for calculating capital charges for operational risk:

- The basic indicator method where capital requirements are a proportion of the bank's gross income,
- The standardized approach where the bank classifies their activities in eight business fields and compute capital requirements as a proportion of gross incomes of each field,
- The advanced measurement approach where bank's internal operational risk measurement sets the corresponding capital requirement.

10.6.2 Author's critical assessment of OpRisk with focus on securitization

In fact, the sophisticated methods listed above have little to do with the relevant operational risks in banks.

The major operational risk in banks stems from fraud and/or incompetence.

The facts from the recent years of Basel II implementation show the following paradox. While numerous professionals and consultants were involved in discussing and understanding the above Basel II methods and in a next step to develop data bases for computing operational risk, no professional or consultant noticed - or if noticed did not take the necessary warning or preventive action against - the failed understanding of the risk inherent in credit risk transfer products, such as securitization activities and the growing incompetence that came along with the flourish of the credit risk transfer markets.

Thus overly concerned with the finest details of Basel II methods for operational risk, banks did not see the forest for the trees – i.e. missed the major operational risk reason – the **growing incompetence and poor management** which were delicately clothed under the complexity of securitization products.

In fact, the poor management of securitization activities - from origination to investment in securitizations - represented a significant operational risk. The misapplication of external ratings to securitization and the perverse payment schemes within rating agencies, the missing competence and the missing look through approach on investor side were significant operational risks relevant to securitizations.

De facto, the core protection against operational risk of the kind described in the previous paragraphs in any institution is a rigorous system of internal controls. This solution is nothing new. However, the recent methods developed in Basel II aiming at a concrete quantification of operational risk via key performance indicators and loss modeling have deteriorated the perception of the real reasons for operational failures. Lost in the finest details of the Framework banks obviously missed the main operational risk - incompetency.

In the following section I present in more detail the Basel II rules for operational risk and parallelly comment on them in order to defend the negativism I expressed above.

According to paragraph 649 "Banks using the Basic Indicator Approach must hold capital for operational risk equal to the average over the previous three years of a fixed percentage (denoted alpha) of positive annual gross income. (…)".

Such a methodology can be certainly applied for calculating capital charges for failures in electricity supply.

However, the most significant sources of operational risk in banks are, as already stated above, fraud and incompetence. Some historical data derived from the previous three years as a fixed percentage (alpha) of positive annual gross income can never be a measure for fraud and incompetence. The recognition of the rush development of financial innovation (such as

credit risk transfer products) in recent years and parallelly the growing systemic incompetence accompanying these products can only be an argument against the effectiveness of a Basic Indicator Approach as a measure for the main operational risk associated with these products and with the financial crisis as a result of the uncontrolled development of these products.

The same arguments hold for the other two Approaches for calculating capital charges for operational risk.

According to paragraph 652 "*In the Standardized Approach, banks' activities are divided into eight business lines: corporate, finance, trading and sales, retail banking, commercial banking, payment and settlement, agency services asset management, and retail brokerage.* (…)". Further as in paragraph 653 "*Within each business line, gross income is a broad indicator that serves as a proxy for the scale of business operations and thus the likely scale of operational risk exposure within each of these business lines. The capital charge for each business line is calculated by multiplying gross income by a factor (denoted beta) assigned to that business line*. (…)"

According to paragraph 654 "*The total capital charge is calculated as the three-year average of the simple summation of the regulatory capital charges across each of the business lines in each year.* (…)"

The concept of the paragraphs 652 to 654 above could as well never incorporate and charge operational risk stemming from incompetence. Again, what could be factually capital charged according to the rule of the Standardized Approach is for example a failure in electricity supply. It is even questionable what operational risk can have to do with the gross income of the eight business lines.

Things get even perverse in paragraph 655, where "*under the Advanced Measurement Approach (AMA), the regulatory capital requirement will equal the risk measure generated by the bank's internal operational risk measurement system using the quantitative and qualitative criteria for the AMA.*"

Although paragraphs 664 to 679 of Basel II set numerous qualification requirements for the implementation of the advanced approach, the factual methodology for computing the charges for operational risk in AMA is not prescribed.

In short, in all the prescribed methodologies the proposed formulae have nothing to do with, at least, one subcategory of the risk they should charge for – the risk of professional incompetence as a subcategory of operational risk. Even worse, according to paragraph 644, operational risk is "*the risk of loss resulting from inadequate or failed internal processes, people and systems* (…..)" which is definitely unquantifiable, not even by high sophisticated statistical methods.

The facts are that the methodologies for charging operational risk set with Basel II have nothing to do with the kind of risk they are supposed to quantify. It is, on the one hand, not clear if the Committee had purposely left the category operational risk not properly defined. On the other hand, there is no logic connection between the category operational risk and the gross income of a bank.

In practice, the only effective protection against operational risk in any institution is a rigorous system of internal controls. Such a system can be more effective only if it is defined on the basis of internal control procedures and concretely **competent personnel instead of computational methods**. Again, lost in the technical detail of the pseudo mathematical methods for computing operational risk, banks lost their incentive to factually control the underlying risk, which is a matter of risk management process and not a matter of a mathematically computed numbers.

Theoretically, banks could have an incentive to better develop their risk management systems in order to use the Advanced Measurement Approach (AMA). However, it is only a desirable interpretation of the rules set in Basel II since the Framework does not actually prescribe any concrete measure according to AMA.

10.7 Extreme risk in Basel II – is stress testing the right response?

Financial innovation created new products, thus having created new risks. In fact a new category of risk occurred: the risk unquantifiable at the time of setting regulation standards. The risk stemming from credit risk transfer products could not have been addresses by the regulator since it was novel itself at the time the Basel II rules were set.

After the credit crunch it became obvious that the magnitude of losses was unimagined and, logically, uncharged in regulatory capital terms.

It is obvious that the frequency of such a crisis is extremely low. That is why such events are called extreme events. However, as financial crises had already happened before, and namely in a periodic manner, it is obvious that financial blasts arise and burst. The consequence of the burst is a great magnitude of losses which in case of the financial crisis beginning mid-2007 almost destroyed the existing banking sector worldwide.

The regulatory view implemented via Basel II, is that risks have to be capital charged. In this context, the question arises, can a regulatory Framework like Basel II address such an unanticipated risk altogether and how.

My answer is no. Basel II definitely does not address and was not able to address in a quantifiable manner the unanticipated risk of the recent financial turmoil.

But more important to understand is, was this "unanticipated" risk unpredictable in its entirety or were some components of the risk to be expected, foreseen and measured? And were not there any other measures, e.g. qualitative, that would have prevented the turmoil?

On the one hand what Basel II should have expected, considered and charged was the shift in default correlations that came along with the financial crisis. Default correlations and cross default are nothing new. Securitization techniques were already popular for a long time. What must have had come with that knowledge was the expectation of a strong correlation of defaults between underlyings of these products as well as between the products themselves. This should have been an issue in Basel II while charging banks for credit risk AND for market risk. But it was not.

It was an inexcusable failure in the Basel II regulation.

Furthermore, correlation of defaults between institutions – institutional cross-failure is a further example of unanticipated risk, which took an unimagined magnitude.

However, it is extremely difficult to set reasonable assumptions regarding asset correlation in extreme scenarios - such as during the credit crunch. This makes the potential regulatory response to extreme risk via Calculation Framework like Basel II an unrealistic task. Predictions of defaults in Basel II are based on historical data which makes the input parameters (probabilities of default, PDs and loss given default, LGDs) for the capital charge calculations pro-cyclical, and certainly understates risk derived from historical data in prosperous times.

I argue that banking regulation can not be prepared to quantify for extreme risk, even if some of the features and subcategories of such a risk can be intuitively expected.

As a response to the crisis, and to the complications presented above, the Committee introduced a Proposal "for sound stress testing" in order to better cope with extreme risk. Ac-

cording to BCBS[28] "*Extreme reactions (by definition) occur rarely and may carry little weight in models that rely on historical data. It also means that they are hard to model quantitatively. The management of most banks did not sufficiently question these limitations of more traditional risk management models used to derive stress testing outcomes nor did they sufficiently take account of qualitative expert judgment to develop innovative ad-hoc stress scenarios. Therefore, banks generally underestimated the strong interlinkages between, for example, the lack of market liquidity and funding liquidity pressures*. (…)"

The Committee recognized that the following specific risks were "*not covered in sufficient detail in most stress tests: a) the behaviour of complex structured products under stressed liquidity conditions; b) basis risk in relation to hedging strategies; c) pipeline or securitization risk; d) contingent risks; and e) funding liquidity risk.*"

My professional assessment of the proposed changes is as follows.

It is on the one hand helpful to finally have recognized these risks. I argue, however, that setting stress scenarios for these risks is from today's point of view simply too late to be reasonable and to prevent against these risks, namely because the "same" extreme risk – as in the current financial crisis - is not supposed to be repeated in the near future again.

The market shrunk. So did the initializing and trading of credit risk transfer products as well. These facts transform the current market conditions into stressed market conditions. So considering the current market data, and generally market conditions is de facto a stress scenario itself. This statement holds for all the five above listed proposed risks. The behaviour of complex structured products already changed dramatically, so these products are already under stressed liquidity conditions. Setting a stress scenario over it would mean to implement some theoretical shifts in the dynamics of these products.

According to BCBS[29], "*given a long period of stability, backward-looking historical information indicated benign conditions so that these models did not pick up the possibility of severe shocks nor the build up of vulnerabilities within the system. Historical statistical relationships, such as correlations, proved to be unreliable once actual events started to unfold*."

If the reliance on historical data is to be blamed for the insufficient severity of stress tests prior to the crisis, how to generate the new required shifts to incorporate changes in behaviour of complex structured products?

This task requires a human professional judgment for setting the shifts which is again a) subjective, b) theoretical and c) in general questionable in quality.

As stated in the previous paragraphs, the currently available market data already incorporates changed behaviour of the products concerned such as greatly reduced or completely abolished issuance of structured products, and only limited liquidity of the market. All the available market data thus incorporates securitization risk and funding liquidity risk.

Again, the Committee lists in its Proposal what was wrong and was not considered via the internal models without providing a concrete methodology for quantifying the listed risks.

In its Stress Testing Paper, BCBS states "*In many cases stress tests dealt only with directional risk and did not capture basis risk, thereby reducing the effectiveness of hedges*. (…)". In fact, reducing the effectiveness of hedges is in no way threatening. Quite the opposite, if

[28] Principles for sound stress testing practices and supervision", January 2009, Consultative Document, Basel Committee on Banking Supervision

[29] "Principles for sound stress testing practices and supervision", January 2009, Consultative Document, Basel Committee on Banking Supervision

reduced hedge effectiveness is considered, it is a reflection of worse conditions than the factual ones.

Further, the Committee states that "*Another feature of the crisis was wrong-way risk, for example related to the credit protection purchased from monoline insurers.* (…)". I comment on this statement as follows: if any protection purchased is to criticize or to blame for the crisis, it is at least the protection purchased from monoline insurers.

The Committee urges banks today to capture "contingent risks", which are defined as contractual and reputational risk associated with off-balance sheet exposures. Further under the term "funding liquidity" the Committee requires today stress tests for the systemic nature of the crisis reflecting the magnitude and duration of the disruption to interbank markets.

In fact, this is an unachievable task.

Conclusion of the section

So what is the value added from the stress scenarios proposed by the Committee now, after the crisis? It is practically additional burdening for the already burdened banks with an implementation of new requirements without a visible chance of success.

Even if reasonable stress scenarios could be generated and implemented, they only deliver value added if their figures can be understood by management (which is quite questionable) and further incorporated into the total enterprise risk management of the entity (which is even more questionable from practical point of view9.

What has to be done instead of increasing the burden on banks via stress testing?

In an extreme scenario like the recent credit crunch the default correlations play a crucial role since defaults become extremely highly positively correlated. They strongly deteriorate risk mitigations otherwise achieved via the popular methods of portfolio diversification. Positive loss correlations which further multiply joint losses lead to the so called contagion, where different institutions simultaneously suffer losses.

The trend towards securitization clearly deepened the risk of extreme market shifts. Securitization was widely believed to reduce risk via asset pooling but appeared to have fulfilled quite the opposite. During the credit crunch most assets lost value thus making the pools made out of them to bad assets in turn.

In order to meaningfully quantify extreme risk default correlations within products and within institutions have to be properly considered. At this point I am talking about both: a) correlations between borrowers or loans within a portfolio, and b) about cross-default within the financial sector.

Additionally, securitization activities must be controlled in another quantitative way: for example, not more than 30 percent of a portfolio should be allowed for securitization and further distribution (retention rule).

A further aspect to be considered, are the possible qualitative measures referring to complex financial products. Robust control procedures over competence of professionals involved in securitization activities and related financial innovation products must be applied. The risks hidden in financial innovation must be understood and properly disclosed.

10.8 Facilitating the "originate-to-distribute" via Basel II

The current Securitization Framework within Basel II encouraged to a great extent banks to shift risk to other parts of the financial system. This can be explained through the very low risk weights for top rated debt – securitization notes, while punishing worse rated exposures

and loss pieces via capital deduction. Regrettably currently there exist only limited global sectoral financial data on the retention and distribution of securitization tranches within banks. According to BIS (2008) top-rated tranches were mostly retained, while mezzanine and junior tranches were transferred to investors. In addition, the understanding and the risk management of securitization techniques was not facilitated in any way by Basel II.

Instead of assigning external ratings with suspicious quality it would have been more reasonable to strengthen the risk management techniques and the overall understanding of these products.

The unambiguous regulation failure achieved via the complete reliance on best ratings for securitized debt led to removing costly debt from the individual bank's balance sheet and distributing it to those institutions not subject to tight capital regulation like hedge funds, asset managers and pension funds. In a next step, banks did not care about the quality of the loans they were making, packaged them and transferred the risk to someone else. As a result, loan terms became too loose.

In short, the revised Framework even encouraged banks to develop the "originate and distribute"-model. This kind of dispersion of risk from banks to different not regulated institutions, in turn, must be viewed as an important cause for the financial disaster (however strongly motivated by the existing financial regulation itself).

The vicious circle

The progressive shift towards the originate-to-distribute model combined with the rapid growth in credit risk transfer products contributed to further development and further nourishing of leveraged finance.

With more **leverage**, however, despite of the apparent benefits to securitization users - loan originators, investors and borrowers - more weaknesses in the risk transfer mechanisms occurred. All in all, originators ended up with significant direct and indirect exposures to the structured purpose vehicles to which risk had apparently been transferred. Through the originate-to-distribute model the transparency regarding risks in securitized products strongly deteriorated or even disappeared.

However, it is still and will remain unclear how to quantify to what extent Basel II is to blame. Though risk was distributed, much of it remained within the banking industry. The greatest losses from the financial turmoil were suffered practically within the banking industry by the largest investment banks – Bear Sterns, Merrill Lynch, Lehman Brothers – whose runs are discussed in Chapter 12.

10.9 Capital arbitrage between trading and banking book

According to Klaas Knot[30], Basel II ensures more consistent treatment of credit risk between the banking book and the trading book. He says: "*This was the fault of the **old Accord**, which allocated less capital to credit risk-bearing assets in the trading book than it did to the same risk if held in the banking book. Basel II addresses this problem via the incremental default risk charge, which forces banks to hold capital against traded credit risk*."

[30] Klaas Knot is director of supervisory policy at De Nederlandsche Bank and chair of the Basel Committee's risk management and modelling group.

However, all promised ideality for consistent treatment of credit risk between the banking book and the trading book is not reality yet. Even worse, the possibility of capital arbitrage between trading and banking book is today greater than ever.

The finalized Basel II Framework was published in June 2004, the Enhanced Version in November 2005 with optional application in 2007 or in 2008. Thus in July 2009, years later, the above cited capital charges for incremental risk in the trading book are still solely a Proposal (the January 2009 Proposal to Basel II). This means that the intended changes to the Framework for incorporating the incremental risk capital charges for trading book positions will be implemented in practice earliest 2011, at best.

What the Basel expert speakers try to sell us as adequate allocation of capital to credit risk-bearing assets in the trading book via the incremental default risk charge (see Klaas Knot above) is a mere nonsense.

Not even a consensus exists in the banking industry regarding the calculation of the risks covered by the Incremental Risk Charge (IRC). The implementation of the proposed Charge (IRC) will lead to even greater variation in the minimum capital requirements through the unclear methodology.

Furthermore, the recognition that the Incremental Risk Charge is needed to capture obvious shortcomings in the VaR approach, questions the general effectiveness of the VaR methodology for measuring and managing market risk.

What was and will be the truth about the consistent treatment of credit risk between the banking book and the trading book until then?

It is clear that the treatment of securitization products, in both trading and banking book, according to Basel I was inadequate. What happened with the treatment of these products in Basel II?

By now, Basel II did not make any significant changes to the treatment of trading book positions compared to Basel I. The general trading book rules were kept up to now almost untouched (see Principle for the Treatment of Market Risk, 1996). Some changes were introduced for the treatment of specific risk in the trading book. These changes refer to the application of external ratings to specific risk of securities, as well as to the new treatment of specific risk of hedging credit derivative positions.

In short, with the implementation of Basel II in its current version little was changed (compared to Basel I) to the capital charges of trading book positions.

Before and during the financial crisis credit risk transfer products were leisurely booked in both trading and banking book. In the case of securitization and resecuritization notes it was not even realized that their pre-crisis treatment - analogous to “normal securities” such as government and corporate bonds - is wrong.

For example, in Germany securitization notes issued by the U.S. Government Sponsored Entities Freddie Mac, Fannie Mae and Ginnie Mae were preferably treated as securities with very low risk analogous Pfandbriefe and were assigned the lowest possible risk weights of 10 or 20 percent. Moreover, in many cases even “other” securitization notes which were defined as “mortgage backed” were also treated as securities with very low risk analogous Pfandbriefe cited above, exactly because of the mortgage backing.

The first to derive from this example is that the bodies responsible for the obviously wrong understanding and subsequently wrong regulatory treatment began with the regulator (BaFin), but also went through the banking professionals who were, at best, insufficiently

informed about the risk content of their notes holdings. Practically, securitization notes were not recognized as securitization or resecuritization exposures altogether.

Because of the wrong understanding of securitization notes, during and after the financial crisis billions of securitizations were revealed in the trading books of the large investment banks - Merrill Lynch, Bear Stearns, but also Deutsche Bank, Commerzbank, and surprisingly even in the state-owned banks such as Landesbanken and IKB in Germany, and suffered great losses.

The second to derive from the example above came with the understanding of these securities and must be classified as capital arbitrage. The realization that the securitization and resecuritization notes if booked in the banking book and treated according to the Securitization Framework of Basel II would be nowadays too expensive in terms of regulatory capital, motivated banks to book these products purposely in the trading book and to calculate the capital charges for them according to their VaR-models or to the standardized approach for the trading book.

Why is this capital arbitrage?

The current VaR-models were established and regulatory approved according to the current Basel II treatment for trading book positions. This is in practice almost identical with the Basel I treatment since Basel II has not adopted and implemented the proposed changes referring to incremental risk yet but just kept the VaR-methodology set up with Basel I.

The current regulatory requirements regarding VaR do not include capital charges for incremental risk, which is crucial for securitization positions. Thus booking credit risk transfer products in the trading book presents today a capital arbitrage chance. The factual credit risk in these positions remains only partially capital charged.

Analogous holds for credit derivatives –stand alone or hedging positions - in the trading book as far as their capital charges are computed via VaR-models. One extreme example is the case of credit derivatives (credit default swap, CDS or total return swap, TRS) with securitization underlyings such as ABS CDS or alike (however this problem refers to standard single name credit derivatives as well).

10.10 The restructuring fake – a new form of capital arbitrage

After the financial crisis every politician, regulator and standard setter is calling for more transparency and adequate risk management. However, these two measures can neither help cure nor prevent the current inherent deficiencies in the financial market.

The following financial evil is currently spreading within the financial sector.

Banks sitting on, meanwhile badly rated, billions of securitization and resecuritization portfolios booked in their balance sheets are nowadays thoroughly trying to restructure the original securitization exposures.

These are for example U.S. Mortgage Backed Securities in billions amounts which were originally top-rated and meanwhile after the necessary risk quality reassessments possessing under-investment grade. Such “crisis” securities lead to accounting problems and are also expensive in terms of regulatory capital.

In order to reduce the costly capital charges for securitization exposures caused by the dramatic downgrades after the financial crisis, which in some cases led to capital deduction (risk weights of 1.250%), different restructuring measures are currently introduced.

One first example would be a rerating procedure. This is applicable if the underlying portfolio provides potentially better individual risks than reflected in the total rating after reassessment and rating adjustment caused by the financial turmoil.

Let us assume the following situation: a securitization tranche was originally (before the crisis) rated AA+ (e.g. by Standard & Poor's or Fitch). After revising the credit quality of the tranche as a result of a) the financial crisis, and b) some adjustment in the rating methodology of the relevant rating agency, the original rating gets adjusted to say B-. Thus, according to the new rating the exposure must be capital deducted according to the Standardized Approach in Basel II.

If the underlying portfolio comprises of "better" individual risks than the assigned total rating (referring to the portfolio as a whole) a subsequent tranching could lead to finer tuning risk. Thus, rerating the new tranches derived from the original exposure can lead to reducing the regulatory costs (the capital charge) for the exposure.

Exemplary, let us assume that reviewing the risk contents of the original exposure leads to the following risk distribution of the original underlying portfolio (as stated above being rated by grade of B- referring to the whole portfolio after the crisis):

Fig. 34: Tranching for restructuring, an example

Percentage of the original tranche	Rating
20%	AA
20%	BBB
30%	BB
30%	B-

Source: own presentation

This risk distribution in any case reduces the regulatory cost of the original product. Without the rerating of the tranche a capital deduction for the whole tranche size should be applied. After the rerating only the lowest rated 30% of the tranche (B-) would lead to capital deduction in the Standardized Approach and all the better rated tranches would be assigned a risk weight below 1.250% (thus being cheaper than capital deduction).

What are the consequences of the above rerating measure for the parties involved and for the financial sector as a whole?

- The individual bank generally reduces its regulatory costs. However, different accounting aspects as well as regulatory issues such as fulfillment of the minimum requirements on the significant risk transfer according to Basel II can arise.
- The Credit Rating Agencies continue to parasite burdening the external costs of banks for the rating procedure.
- The existing risk remains in the financial system. The new tranching solely provides a better reflection of the risk originally rated thus changing the capital charges for the original exposure.

As long as such a rerating measure is not introduced for capital arbitrage purposes, it can be viewed as an improvement in credit quality assessment and risk reflection.

However, capital arbitrage might often be hidden behind such a restructuring procedure. In particular, after the financial crisis as long as banks are still heavily burdened by balance sheet losses and high regulatory costs, the aspects of capital arbitrage might be the driving force behind rerating of securitization exposures.

This is only one example of a restructuring measure. The financial engineering provides a wide spectrum of restructuring possibilities. The presented fine tuning could be also executed for example through a synthetic tranching via Total Return Swaps (TRS) instead of real tranching and providing external ratings.

The synthetic tranching of the original exposure can be resumed as follows. An imaginary risk distribution analogous to the rerating case above might be internally executed by the bank. In order to get away from the original rating and capital deduction of the original exposure four TRS hedging the underlying risk can be conducted with external counterparties. According to the table above, in a first step the (originating) bank enters a protection buyer position. In a next step, the bank buys the TRS back thus taking the underlying risks back to its books, i.e. the (originating) bank takes a protection seller on the underlying assets. The new four positions are capital charged according to the risk weights of the underlying portfolios.

In sum, the synthetically generated positions and their capital charges are less costly than the capital deduction of the original exposure.

Once again, these are only examples of numerous restructuring possibilities.

What definitely holds is that in many cases not only the improvement of the whole picture of credit quality of the underlying portfolio is the main objective of such transactions. Capital arbitrage is often hidden behind restructuring of securitization exposures.

10.11 Pro and contra the pro-cyclicality arguments in Basel II

I present this section mainly for completeness. It is primarily based on existing literature.

A popular concern regarding Basel II is that capital requirements may be subject to macroeconomic fluctuations.

A bank's situation in a downturn can be assumed to be the following. Generally, bank profits are negative during recessions, leading to reduced lending capacity. Additionally, in downturns bank's capital deteriorates due to loan losses. Parallelly, the bank's non-defaulting borrowers might be downgraded, leading the bank to the need of holding more capital against the deteriorated credit quality of its loans.

All these assumptions would intuitively lead to higher capital requirements. Taking the current regulation Basel II into consideration leads to an increase in capital requirements - either via external ratings in the standardized approach, or via probabilities of default and loss given default in both Internal Ratings Based Approaches.

In short, the lowest risk is seen at the peak of a business cycle, thus meaning the regulatory capital under Basel II should be low. Vice versa, at the downturn, risk is supposed to be high, leading to high capital requirements. This, in turn, leads to reducing lending and deepening the downturn.

If more equity can not be raised - which is normally the case in a downturn – the bank is expected to reduce lending. This would in turn worsen the already worsened economic conditions. This sequence of arguments is the basis for concern on the pro-cyclicality in banking regulation.

The further development of the above hypothesis of "further worsening of the already worsened economic conditions" would lead to increasing the risk of credit crunch, deepening the downturn and increasing the banking instability. This chain of thoughts leads us to the paradox that Basel II thus could increase lending volatility, systemic risk and systemic bank failures.

However, the above presented basic assumptions of the "pro-cyclicality" - capital levels being at their lowest at the peak of the business cycle - can also be questioned and are not proven yet.

The adherents to the pro-cyclicality idea see this phenomenon as "*a fundamental weakness in the regulatory framework because it puts no constraints on banks' rate of growth when things are going well and then bites deeply later on, which could mean each boom is followed by a credit crunch* ."

The interaction between the U.S. housing market and the international financial sector presents a suitable example of the pro-cyclicality as a significant problem, which was not timely addressed via Basel II despite the popularity of the pro-cyclicality argument within the experts' society. After the crisis it was in fact too late to draw the attention of the international standard setter and national regulators on the meaning of pro-cyclicality in banking regulation for the financial sector.

Some opponent economists see just the opposite – the current capital requirement rules as meaningfully addressing pro-cyclicality.

Klaas Knot, for example, argues that Basel II is counter-cyclical by means of the main inputs into its calculations - probability of default (PD) and loss given default (LGD). He argues that these estimates were not intended by the regulator as a snapshot of the risk level at one point in time. According to Basel II (June 2004) paragraph 468, "*downturn conditions should be taken into account when setting the LGDs.*" This theoretically means that the standard setters intended to incorporate expectations of credit performance in bad times, thus incorporating a pro-cyclical component into the rules. According to Knot the Basel II requirement to perform stress tests must be also considered a counter-cyclical component of the Framework.

However, the idea of through-the-cycle PDs is up to now just a vague notion, since no bank has managed to produce a rigorous estimate for through-the-cycle PDs. A vague solution is to slightly higher PDs in a downturn.

Factually, predictions of defaults in Basel II are based on historical data which makes the input parameters (PDs and LGDs) for the capital charge calculations pro-cyclical, and certainly understates risk in prosperous times. One best example represent mortgages in the U. S. during the housing boom. Defaults were overly low as general economic conditions were good. Stressed borrowers could manage their difficulties by selling the underlying assets because of the climbing house prices. Thus historical data serving for parameter estimation was not necessarily adequate. The next example is the parameter "loss given default" which was also underestimated. During prosperous times loss given default might be stable. However, during downturn loss given default rates increase dramatically.

According to Repullo and Suarey[31] (2008) "*making banks' capital requirements risk-sensitive set the system up for credit crunches during economic downturns*". They argue that "*small cyclical adjustments to the confidence levels set by regulator could preserve Basel II's value-at-risk foundation while avoiding painful credit crunches during periods of economic distress*".

Long before the financial turmoil several researchers expressed concerns about the possibility that risk-sensitivity of the new Accord may intensify business cycle fluctuations, causing lending reduction during economic downturn.

Developing these concerns, Repullo and Suarey (2008) recently assessed the impact of Basel II on banks' cyclical lending capacity considering the expectation that banks respond to

[31] See "The Pro-cyclical Effects of Basel II" (2008)

the new regulatory environment by modifying their buffers of capital over the regulatory minima. Their analysis suggests that, "*despite banks' attempt to reduce the pro-cyclical effects by increasing their buffers, Basel II implies a much larger contraction in credit supply than Basel I when the economy enters a recession*".

10.12 Summary of the chapter

In this chapter I presented numerous shortcomings stemming from the original Framework Basel II as set per June 2004 and enhanced autumn 2006.

Some of the regulatory failures got evident with or after the recent financial crisis. It became obvious, that the regulatory treatment of complex structured finance products was inadequate.

However, many of the shortcomings, especially related to securitization techniques and structured finance, were already popular long before the crisis. This fact can only lead to the conclusion that the recent financial crisis was an obvious failure in financial regulation.

Regulatory gaps in securitizations and related credit risk transfer products must be urgently closed. For these purposes I propose a reasonable usage of the current rules of financial regulation instead of further increasing complexity in regulatory rules which I address in Chapter 13.

11 Securitization enhancements to Basel II

In this chapter I summarize the proposed changes to the securitization framework and analyze some flaws that can be recognized in the new securitization rules. This analysis should be viewed as completely own contribution of mine.

Credit rating agencies (CRAs) are largely concerned by the January 2009 amendments to the Framework. This is the case because the rating agencies were long under fire for producing "wrong" ratings. As a response to these critiques, currently they partially adapted or at least began to adapt their methodologies in order to better the rating mistakes.

Shortly speaking, with their adapted methodologies CRAs try to better reflect the credit quality of securitizations. These adapted ratings are in general lower and thus lead to higher capital charges according to Basel II.

This in turn can inadequately increase the capital charges taken in combination with the newly proposed higher risk weights for securitizations and resecuritizations which issue is also addressed in the following sections.

11.1 Overview

In January 2009 the Basel Committee of Banking Supervision (BCBS) proposed amendments to the current regulatory treatment of securitization transaction via the Consultative Document *Proposed Enhancements to the Basel II Framework*. The Amendments are derived from the lessons learnt during the financial crisis particularly regarding securitizations which were obviously wrong treated in the originally issued version of the framework (June 2004, enhanced November 2005).

The amendments comprise of changes to existing capital requirements for both trading book and banking book (Pillar 1). Furthermore, they also include standards for more rigorous supervision and risk management (Pillar 2) as well as enhanced disclosure requirements Pillar 3).

11.2 Pillar 1

In short, the Enhancements to Pillar 1 (minimum capital requirements) according to the BCBS January Proposal *Proposed Enhancements to the Basel II Framework* are:

- Strengthening the risk capture of the framework through **higher capital charge for resecuritization notes**.
    - The reason: the crisis has clearly shown that resecuritizations i.e. CDOs of ABS were more highly correlated with systematic risk than traditional securitizations (and than traditionally perceived by users).
- Increase of the capital requirements for ABCP liquidity lines (asset-backed commercial paper).
    - The reason: the crisis has clearly shown that off-balance sheet conduits were not adequately reflected in the capital regime (however ABCP are out of the scope of my work).
- Obtaining **comprehensive information regarding the underlying exposure of the externally-rated securitizations**, both within and across structures.

- The reason: the crisis has clearly shown that banks did not care about securitized portfolios.

11.2.1 Proposed changes - trading book

The specific of the Proposal is that it presents changes to credit and related risks, but still referred to as a "market risk."

After the financial crisis the Committee finally realized that the Framework in its current version not only did not reflect ***all*** the risks in the trading book, it failed to address the ***main*** risks in the trading book. The possibility of capital arbitrage between banking and trading book was already discussed in section 10.9. This opportunity for capital arbitrage was unambiguously enabled because of the current failures in the capital rules for trading book positions.

In response, the Committee proposed significant changes to the market risk capital requirements. For Committees defense one must admit that the current Proposal is based on some changes already proposed in previous reviews of the Framework.

The most significant proposals are as follows.

According to the Proposal in the Consultative Document "Proposed enhancements to the Basel II framework" (…) "*The minimum capital required for resecuritization exposures held in the trading book could be no less than the amount required under banking book treatment (at least on an interim basis for banks that model specific risk until an incremental risk charge*[32] *is implemented).*"

Thus, the capital charge for securitization exposures is the same to that applicable to that position if held in the banking book. The Committee sees this change as reducing the incentive for regulatory arbitrage between the banking and trading book.

A separate proposal addresses the regulatory treatment of market risk, see footnote 34.

11.2.2 Proposed changes - banking book

11.2.2.1 Background

The changes to the banking book rules solely refer to securitization exposures.

Under the securitization framework, the capital charge for securitization exposures is generally the product of 8 percent (the minimum capital requirement), the amount of the exposure

[32] Thus the analyzed Proposal references to another Basel Proposal of January 2009, called Consultative document "Guidelines for computing capital for incremental risk in the trading book". According to it, irrespective of the possession of a regulatory approval to model specific risk, each bank's market risk capital requirement must include an "Incremental Risk Capital Charge" (IRCC). The IRCC must capture both - credit migration risk and default risk and replaces the capital charge for specific risk for banks currently using the standard approach for specific risk (the general market risk VaR measure remains unaffected).

However, according to the January Proposal for computing capital for incremental risk in the trading book (paragraph 10) "….. when computing the IRC, a bank is not permitted to incorporate into its IRC model any securitization positions, even when securitization positions are viewed as hedging underlying credit instruments held in the trading account. This prohibition reflects the Committee's current judgment that, for the purpose of quantifying default and migration event risks, the state of risk modeling in this area is not sufficiently reliable as to warrant recognizing hedging or diversification benefits attributable to securitization positions."

and a risk weight, according to its external ratings (if any). The risk weights vary depending on the approach in use: "standardized approach" or "internal ratings-based" (IRB) approach.

Fig. 35: Securitization in the Standardized Approach

Short-term ratings

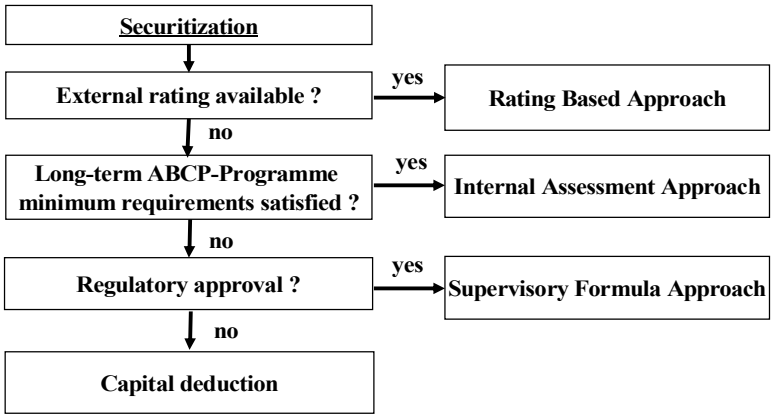
External credit assessment	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ and below **or unrated**
Risk weight	20%	50%	100%	Deduction

Long-term ratings

External credit assessment	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ and below **or unrated**
Risk weight	20%	50%	100%	350%	Deduction

Source: own presentation according to Basel II

Fig. 36: Hierarchy of IRB Securitization Approaches



Source: own presentation according to Basel II

For some off-balance sheet exposures, a "credit conversion factor (CCF)" is also used (in connection with asset-backed commercial paper (ABCP) liquidity facilities).

Banks have to fulfill specified "operational requirements" in order to use the securitization framework. However, the operational criteria relate currently to originating banks.

11.2.2.2 Proposed changes

The proposed changes refer to the following aspects of securitizations.

11.2.2.2.1 Risk weights for resecuritizations

The existing risk weights for both the standardized and IRB approaches were revised (see tables below). For resecuritization exposures (such as ABS CDO, for definition see Chapter 6) higher risk weights will apply.

Fig. 37: Standardized Approach

Long-term rating	Securitization exposures	Resecuritization exposures
AAA to AA-	20	40
A+ to A-	50	100
BBB+ to BBB-	100	225
BB+ to BB-	350	650
B- and below or unrated	Deduction	

Short-term rating	Securitization exposures	Resecuritization exposures
A-1/P-1	20	40
A-2/P-2	50	100
A-3/P-3	100	225
All other ratings or unrated	Deduction	

Source: BCBS, January 2009 "*Enhancements to the Basel II Framework*".

Fig. 38: IRB Approach

	Securitization exposures			Resecuritization exposures	
Long-term rating	Senior, Granular	Non-Senior, Granular	Non-granular	Senior	Non-Senior
AAA	7	12	20	20	30
AA	8	15	25	25	40
A+	10	18	35	35	50
A	12	20	35	40	65
A-	20	35	35	60	100
BBB+	35	50	50	100	150
BBB	60	75	75	150	225
BBB-	100	100	100	200	350
BB+	250	250	250	300	500
BB	425	425	425	500	650
BB-	650	650	650	750	850
Below	Deduction				

	Securitization exposures			Resecuritization exposures	
Short-term rating	Senior, Granular	Non-Senior, Granular	Non-granular	Senior	Non-Senior
A1	7	12	20	20	30
A2	12	20	35	40	65
A3	60	75	75	150	225
Below	Deduction				

Source: BCBS, January 2009 "*Enhancements to the Basel II Framework*".

A change to the treatment of ABCP liquidity facilities was also proposed. However, as defined in the Introduction to my thesis these products are out of the scope of this work.

11.2.2.2.2 Operational requirements for credit analysis

The Committee has proposed additional operational requirements for the usage the securitization framework. Unlike the current operational requirements, the new requirements apply to investors, as well as originators.

According to the new requirements banks must perform their own due diligence on these exposures, instead of blindly relying solely on external credit ratings. If the operational requirements are not fulfilled, the exposures must be deducted from capital.

11.3 Pillar 2 and Pillar 3

Besides the quantitative minimum capital requirements (Pillar 1), Basel II incorporates the supervisory review process (Pillar 2) and market discipline (Pillar 3).

The Committee's proposal is intended to enhance both Pillars: Pillar 2 and Pillar 3.

11.3.1 Pillar 2

Regarding the Enhancements to Pillar 2 a supplemental Pillar 2 guidance was proposed.

As a response to the failures in risk management that were revealed with the financial crisis, the Committee proposed the following:

- Firm-wide governance and risk management – it is required that directors and senior management understand the risk profile of the bank as a whole, which includes understandable firm-wide exposure aggregation of information in a timely manner, defining long-term risk appetite and control over risk exposures and concentrations
- Capturing firm-wide risk concentrations - arising from both on- and off-balance sheet exposures and securitization activities, including the potential impact of non-contractual commitments, implicit support and reputation risk on risk exposures, capital and liquidity; and
- Banks establishing incentives that reflect the long-term risks and rewards associated with their business models.

The supplemental Pillar 2 guidance also incorporates recommendations from other Committee initiatives relating to liquidity risk management (September 2008), financial instrument fair value practices (November 2008) and stress testing.

11.3.2 Pillar 3

The following Enhancements to Pillar 3 (market discipline) were proposed.

After a careful assessment of leading disclosure practices, BCBS has developed proposed revisions to the existing Pillar 3 requirements, focusing on the following six areas:

- securitization exposures in the trading book;
- sponsorship of off-balance sheet vehicles;
- the Internal Assessment Approach (IAA) for securitizations and other ABCP liquidity facilities;
- resecuritization exposures;
- valuation with regard to securitization exposures; and
- pipeline and warehousing risks with regard to securitization exposures.

These disclosures are intended to complement the other two pillars of the Basel II framework by allowing market participants to assess capital adequacy of a bank through key pieces

of information on the scope of application, capital, and risk exposure and risk assessment process.

The Committee's proposal includes certain disclosure requirements that are not solely related to the understanding of Pillar 1 capital requirements (e.g. disclosures concerning a bank's sponsorship of off-balance sheet vehicles). These are intended to help market participants better understand a bank's overall risk profile. The Committee believes that these proposed enhanced disclosure requirements will help to avoid a recurrence of market uncertainties about the strength of banks' balance sheets related to their securitization activities.

11.4 Author's assessment of the proposed enhancements

The proposed new rules are intended to improve the calibration of securitization and re securitization risks. They will certainly increase the minimum regulatory capital charges. The new rules are expected to improve the regulatory treatment of credit risk transfer products such as ABS CDOs and similar securitization activities. This has long been a necessary step in banking supervision.

Regarding the increased resecuritization risk weights however some concerns arise. There is no doubt, that resecuritization positions incorporate higher risk than other securitization notes and that is why might deserve higher risk weights.

The implicit regulatory rationale for setting higher capital charges for resecuritizations positions considers the potential risk concentrations and the contingencies in the pattern of resecuritizations which make them by definition more volatile and more complex than "plain vanilla" asset-backed securities. These features get even stronger under adverse market conditions. It is nowadays commonly acknowledged that resecuritizations are highly sensitive to systematic risk.

However, the Committee has not provided any concrete data for the much higher risk weights. Just one example is the 100% higher risk weight for senior (AAA to AA-) resecuritizations applied under the Standardized Approach (risk weights increased from 20% to 40%). The analogous examples are numerous, regarding both: the Standardized Approach and the IRB Approach (see table in the previous section).

Resecuritization played definitely a crucial role for the financial market turmoil. It is clear that with flawed ratings and with Basel II risk weight tables based on these flawed ratings, the calculated capital requirements for resecuritization positions were not adequate.

The main concern with the January Proposal is that the Committee **not even mentions any calibration methodology for the set risk weights**.

The Committee is not an institution maintaining data on defaults, losses and collateral, which should be the relevant characteristics for the calibration or the recalibration of the risk weights for resecuritizations. Since the Proposal with the new risk weights was published quite fast after the financial turmoil, it is at best interesting on which basis the Committee set the new risk weights. Have correlated defaults and losses amongst borrowers, and further under stress conditions, been considered for setting the new risk weights? The Proposal says nothing about it.

Before blindly accepting this next Basel Proposal, one should ask and get an answer from the Committee to the following questions:

- How are correlations calibrated?

- Which correlations – between underlying single assets in the collateral pools, between asset classes, between different sectors and / or between different vintages of resecuritization notes - were considered?
- What kind of data was used for calibrating the new risk weights? Was it again historical default rate data under normal conditions?
- Which sectors were considered at all? Default rate data for mortgages can not be relevant for default rate data for lease or credit card receivables. Not all resecuritizations represent RMBS CDO. Different types of resecuritization, such as CDO squared etc. use collateral from different sectors.
- Were the underlying sector data from poorly or normally performing sectors?

In short, the Committee's calibration of the new risk weights for securitization and resecuritization positions should be underlined by robust calibration methods and disclosed before being taken as the next Basel undisputable truth.

A second concern arises from the missing rules for the treatment of numerous significant components within securitization transactions such as

- early termination clauses (calls) - acceptability of early termination options, limitations on minimum non-call period and/or performance fees linked to calls,
- upfront premia and pricing considerations when extremely high premia are applicable,
- rebate mechanisms, and
- excess spreads.

And last but not least concern with regard to the proposed enhancements on resecuritizations, is the proposed definition itself. "A resecuritization exposure would be defined as a securitization exposure where one or more of the underlying exposures meet the framework's definition of a securitization exposure. In other words, if one underlying exposure was a securitization exposure, the securitization exposure in question would be considered a resecuritization."

This definition may catch some other positions - though unpurposely - that do not require additional capital. This could be the case for example for CPDOs (Constant Proportion Debt Obligation, PPS (Principle Protected Swaps) or PPN (Principle Protected Notes), as defined in Chapter 2, since their definitions superficially resemble the provided resecuritizations' definition in the January Proposal.

It should be specified if a product is based on double-leverage and correlation risks (which are intended to be captured by the Proposal on resecuritization risk weights) instead of relying on the current definition of resecuritizations in the Proposal.

11.5 Concentration risk in Basel II proposals

As presented in the previous sections, the risk weights on 'resecuritizations' will be increased compared to the risk-weights on other securitizations.

At the same time, rating agencies (Fitch and Standard and Poor's) tightened the criteria for quantifying risks of collateralized debt obligation in the first half of 2009. This provides a more conservative treatment, in particular of risk reflecting concentrations and the potential for correlated defaults on 'resecuritizations' collateral under stress.

According to Fitch the revised criteria are meant to capture enterprise-wide risk concentrations and to establish an appropriate capital buffer for these risks at a portfolio level.

In this context, Fitch argues that the increased risk weights for 're-securitizations' according to the January BCBS Proposal for enhancing Basel II will be too high relative to the risk-weights on other forms of securitization exposure.

Fitch analyzed the performance of a broad range of assets and entities that performed adversely during the financial turmoil in order to identifying and enhance the assessment of credit risk. According to Fitch, Fitch has incorporated a number of findings and new insights about the risk profile and collateral performance of structured finance CDOs within the revised ratings criteria.

According to Hansen and Jennings from Fitch Ratings, "*one of the main variables for negative performance of SF CDOs has been the presence of risk concentrations within the underlying collateral pools of structured finance assets. Correlated performance of collateral assets under stress was more pronounced within portfolios containing significant risk concentrations*."

By applying a new approach for estimating and incorporating asset correlations (and, logically, default correlations) amongst collateral assets, Fitch's revised structured finance CDO ratings methodology provides more rigorous treatment of risk concentrations and establishes more conservative overall credit enhancement levels.

In short, Fitch sees an overlap between Fitch's tightened structured finance CDO rating criteria and the proposed increases in Basel II risk-weights on 're-securitization' exposures, and the thread of 'double-counting' of risks for these products.

Conclusion of the section

Concluding, since the potential 'double-counting' of risks is an obvious reflection of the combination of the revised Basel II risk weights on resecuritizations and the revised rating methodologies, it should be left to the rating agencies to adequately measure the risk of structured finance CDOs.

As long as Basel II requires the calculation of capital charges based on external ratings provided by rating agencies and accepts only certain agencies as eligible thus strengthening their semi-regulatory role, these agencies should in fact adapt their methodologies in order to provide reliable ratings.

11.6 Summary of the chapter

This chapter pointed out at several shortcomings also inherent in the proposed enhancements to Basel II focusing on securitization.

Certain consistency between the regulatory and accounting treatment of securitizations at least referring to consolidation and the definition of asset transfer should be ensured as well. These issues had not been addressed yet.

12 Capital ratios as the centre of banking regulation?

12.1 Introduction

Since the financial crisis that started mid-2007, the poor economic conditions affected adversely numerous banks. The selected banks analyzed in this chapter were affected more than their peers although their capital ratios were far above the regulatory minimum capital charges of eight percent.

I focus my analysis in this chapter on capital ratios, so in the following sections I concentrate on the capital management and regulatory capital issues in selected banks.

I analyze the several selected cases in order to show that capital ratios alone can not be a measure for the insolvency of an individual financial institution.

In particular, the common pattern of the selected banks is that they largely invested in mortgage origination and securitization - residential and commercial, which in turn increased their leveraged exposures.

The high leverage and parallelly the drain of credit risk out of the single banks' balance sheets are not captured by the current European regulatory capital requirements and can not be captured by the regulatory capital ratios in their current form.

For that reason neither disclosure of the financial ratios, including capital ratios, nor disclosure of other internal and external risk management techniques provided a signal of the coming runs until they factually came.

After presenting and analyzing the selected cases of bank collapses I introduce the U.S. supplement to the capital ratios based on risk weighted assets – the Concept of Prompt Corrective Action (PCA). PCA considers as a supplement capital adequacy measure the leverage ratio and differentiates banks in five different classes based on both: total capital ratio and leverage ratio.

However, the adoption and application of the leverage ratio in the U.S. did not prevent the numerous collapses of U.S. banks as well, not even of the "strongest" internationally active banking and securities house leaders Merrill Lynch, Bear Stearns and Lehman Brothers.

All the selected banks in my analysis were largely exposed to securitization and resecuritization transactions, among others of U.S. sub-prime mortgages.

The message of this chapter and the conclusion of the case study is that capital ratios are insufficient as the centre of banking regulation. A supplemental measure for supporting capital adequacy via leverage ratio is in fact a prudential tool for partially enhancing quality of financial regulation but as shown in the chapter also not a sufficient tool to capture individual and systemic bank failures.

12.2 The IKB Case

IKB Deutsche Industriebank is a specialist bank for corporate lending in Germany and Europe. Its target groups are small and medium-sized enterprises as well as multinational enterprises and project partners.

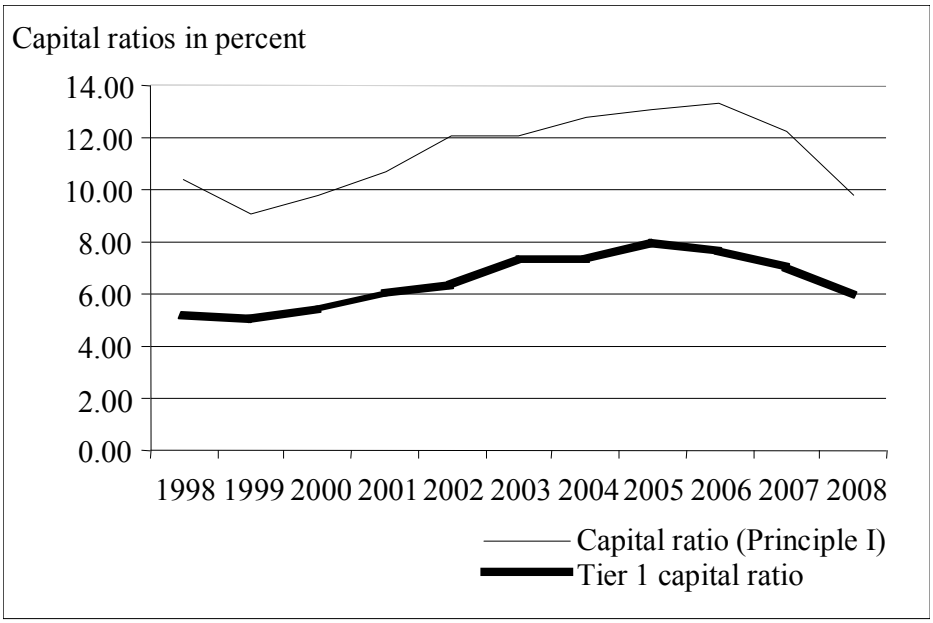
IKB is subject to the regulations applicable to German banks and bank groups[33]. Risk-weighted assets must be backed with at least 8% equity (capital or solvency ratio). Risk-weighted assets that are backed with core capital are subject to a minimum ratio of 4% (core capital ratio).

IKB applied the transitional regulation for implementing Basel II[34] and continued to calculate regulatory indicators in accordance with principle I (Grundsatz I) until 31 December 2007. From 1st January 2008 the Basel II regulations were applied (SolvV). Risk-weighted assets were determined according to the Standardized Approach.

The graph below shows the capital ratios (capital ratio and the core capital ratio) of IKB in the past ten years. As can be seen, the capital ratios have always been far above the minimum capital requirements according to Basel.

This fact however did not help IKB to escape the sub-prime crisis. In August 2007 IKB Deutsche Industriebank ousted its chief financial officer as a response to the destroying effects of the collapsed U.S. sub-prime mortgage market over the Bank.

Fig. 39: Capital ratios in percent, IKB - 1998 to 2008



Source: own presentations, IKB, annual and interim reports

In fact, IKB had invested in groups of assets to U.S. sub-prime real estate loans via its funds Rhineland Funding and Rhinebridge plc..

As a response to the collapse of IKB Kreditanstalt für Wiederaufbau (KfW), a strong German state-owned institute, being the controlling shareholder in IKB with 38 percent, poured €8.1 billion into Rhineland Funding and €80 million in Rhinebridge plc in order to save IKB.

According to IKB, in the financial year 2007/08 the main purpose of capital management was to ensure the minimum regulatory ratios that were required as a result of the financial crisis.

[33] In particular, these are paragraphs 10 and 10a of the KWG (Kreditwesengesetz) and Principle I (Grundsatz I, the German Capital Requirements Directive according to Basel I), which state that sufficient regulatory capital must be held.

[34] Paragraphs 339 (9) of the German Solvability Ordinance (Solvabilitätsverordnung)

The main problems of IKB were its securitization investments in the U.S. mortgage market. It can be seen in tables below that about fifty percent of IKB's portfolio investments was invested in securitization notes (ABS), with the greatest part of it (more than forty percent) in turn invested in sub-prime mortgages.

Fig. 40: Underlying asset structure of IKB's portfolio investments as of 30 June 2008

Underlying portfolios	30th June, 2008		31st March, 2008	
	Nominal amount in € billion	in %	Nominal amount in € billion	in %
Corporates	2.5	50	2.7	46
ABS	2.2	43	2.3	41
thereof with sub-prime content	1.7	34	1.8	32
ABS / Corporates mixed	0.4	7	0.7	13
thereof with sub-prime content	0.2	4	0.2	4
Total	5.1	100	5.7	100

Source: IKB, interim report June, 2008

According to IKB's Annual Report 2008 the following regulatory and risk management treatment of securitization and in particularly structured finance CDOs (resecuritization) applied and was presented under the category "Spread risk".

"Spread risk results from changes in the default and liquidity premiums over the risk-free interest rate, that are priced into securities and derivatives.

Spread risk is particularly relevant to the Bank's portfolio investments. At the end of the first quarter of the current financial year, CDOs of Corporates and CDOs of CDOs were included in VaR calculations for the first time using historical simulation in order to allow an integrated perspective for the calculation of the overall risk-bearing capacity. As in the 2007/08 financial year, market price risk for CDOs of ABS and plain vanilla ABS bonds was measured using appropriate scenario analyses. For CDOs of ABS, the underlying loss estimates are stressed and the resulting risk calculated on the basis of the difference between the stressed and unstressed market values."

Die inadequateness of VaR as measure for resecuritization risk is nowadays commonly acknowledged. The VaR measurement citation here is meant to underpin the inadequateness and inappropriateness of the current risk measurement concept of the already hit IKB. It is furthermore surprising not only that this concept is still applied with respect to the above mentioned resecuritization exposures, it is more astonishing that the annual report was accepted and sighed by the year-end auditor of the Bank although the inadequateness of VaR for resecuritizations is nowadays commonly acknowledged, at latest after the crisis.

Resuming remark

The obvious insights from the annual reports and the data presented above are:

- Despite regulatory capital ratios which were over long period far above the regulatory required minimum, IKB was not able to absorb the significant losses resulting from the sub-prime crisis spread from the U.S. world-wide;
- The large securitization (ABS, to the largest part consisting of sub-prime loans) and resecuritization exposures (ABS CDOs, CDO of CDO also to the largest part

consisting of sub-prime loans) did not draw the appropriate attention of the Bank's management prior to the financial turmoil;

- Late after the financial turmoil, inappropriate risk measurement (VaR citation above from the Annual Report 2008/2009) is still applied and even disclosed;
- Only due to the strong government support (bailout) IKB escaped its insolvency.

My point here is first the insufficiency of capital ratios as an adequate measure of single bank's s stability.

Second, regrettably we have to admit again on the basis of the above presented IKB disclosures that the recent financial crisis was a "Securitization Crisis", and a "Crisis of Professional Incompetence".

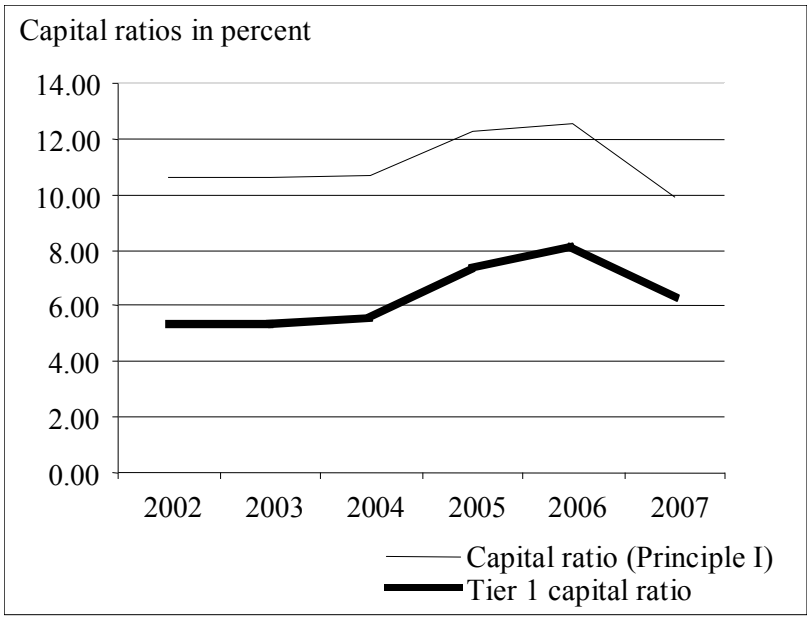
12.3 Sachsen LB

Landesbank Sachsen Girozentrale (Sachsen LB) is a German state lender which was largely exposed to US sub-prime mortgage debt.

Although its capital situation was stabile and the regulatory capital ratios far above the required minimum (table below), Sachsen LB became one of Europe's biggest victims of the credit crisis.

The capital situation of Sachsen LB at the beginning of the financial turmoil was as follows:

Fig. 41: Capital ratios in percent, Sachsen LB - 2002 to 2007



Source: own presentations, Sachsen LB, annual and interim reports

According to its Annual Report 2005, Sachsen LB Europe, an affiliate on Sachsen LB in Dublin, Ireland, was a leading asset backed securities investor in Europe.

At first, the Dublin affiliate Sachsen LB Europe focused on risk-averse low-return investments, such as European corporate and government bonds. However, this strategy had to be changed in order to improve the competitiveness and return prospects of Sachsen LB, as explained in the following paragraphs.

Sachsen LB, analogous the rest of the Landesbanken in Germany, was concerned about the competitiveness of its businesses after the expiration of the state guarantees for Landesbanken in July 2005[35]. The justified concern of the Landesbanken was that with the expiration of the government backing the price of borrowing would increase, making capital markets profits difficult to achieve, especially for Landesbanken as opposed to the large internationally active commercial banks in Germany, such as Deutsche, Dresdner, and Commerzbank etc.

For that reason, Sachsen LB hired in 2000 external strategic consults (McKinsey & Co.) to solve this problem. Their recommendation was to come back to traditional low-margin lending to regional firms. Further more, McKinsey warned against an aggressive push into capital markets. Despite these warnings, Sachsen LB's management[36] pushed the expansion of its Dublin affiliate Sachsen LB Europe into capital market activities, in particular in investing in various types of assets backed securities, including collateralized mortgages.

According to the bank's annual report, Sachsen LB Europe managed by 2002 about 11 billion Euros of synthetic assets, which was at that time 77 times higher than its shareholder equity.

Furthermore, Sachsen LB's credit committee, composed of regional executives and politicians, voted to push up to Euro 43 billion by 2010 into capital markets via the off-balance sheet vehicle Ormond Quay.

The banking supervisor in Germany (BaFin) got aware of the facts. The extreme high profits of Sachsen LB Europe caught the attention of BaFin, which mandated the auditing company KPMG to a special audit Sachsen LB Europe in 2004. KPMG found, "that Sachsen's administrative board was unaware of the level of investments made at the subsidiary or the potential losses they posed".

According to a press release of Sachsen LB (February 2007, just days before the U.S. subprime-mortgage turmoil started) Sachsen LB's Irish affiliate - Sachsen LB Europe - was one of Ireland's most profitable banks.

The German state (Sachsen) was forced to sell the troubled state lender. Sachsen LB was taken over by the German contemporary biggest regional state lender LBBW (Landesbank Baden Württemberg). Additionally, in order to save the run, Sachsen LB received an emergency 17.3 billion Euro line of credit from a group of regional savings banks in August 2007.In order to sell Sachsen LB to LBBW, the state Saxony provided guarantees of up to 2.8 billion Euros to cover losses on a new fund, into which 16 billion Euro of assets from Ormond Quay and Sachsen Funding were placed.

Resuming remark

The situation at Sachsen LB was almost identical with the one of IKB:

[35] The state guarantees until July 2005 (die Gewährträgerhaftung) led the following advantage for Landesbanken. If a publicly owned company had debts higher than its assets, the Landesbanken as its creditors were allowed to turn directly to the government for emergency funding. Thus, the state guarantees helped Landesbanken to be assigned first class credit ratings (AAA) and refinance their operations cheaper than its peers. However, the European Commission abolished the state guarantees with a decision from 2001 coming into force by July 2005 in order to remove competitive advantages for Landesbanken.

[36] One board member objected to the expansion of Sachsen LB Europe and left the Bank at the end of 2001 as his proposal to invest in SMEs credit expansion was vetoed.

- Despite long period of regulatory capital ratios far above the regulatory required minimum, Sachsen LB was not able to absorb the sub-prime losses;
- The large securitization and resecuritization exposures did draw the attention of the Bank's management prior to the financial turmoil but this did not change the investment strategy of the bank;
- BaFin tried to intervene but for certain reasons this intervention did not end successfully. Thus the prevention of the Sachsen LB's run failed.
- Only due to the strong government support (bailout) Sachsen LB escaped its insolvency.

12.4 Northern Rock

The U.K. mortgage lender Northern Rock was the first bank experiencing a run in the recent crisis. It happened despite the presented a "very positive medium term outlook for the Company" in Northern Rock's interim report (July 25, 2007).

The effects of the U.S. sub-prime crisis on Northern Rock were so destroying that, despite a large emergency liquidity support from the Bank of England, Northern Rock had to be taken into public ownership in February 2008.

According to the Mid-Year Report 2007, on 29 June 2007 and with effect from that date Northern Rock received its FSA[37] approval for Basel II application.

Northern Rock adopted the Internal Ratings Based (IRB) approach for retail exposures in residential and personal unsecured loans, the Foundation IRB approach for treasury portfolios and the Standardized approach for commercial loans.

Through the implementation of Basle II the risk weighted assets at 30 June 2007 fell from around £33.9 billion under Basle I to £18.9 billion under Basle II, a reduction of ca. 44%[38].

According to Northern Rock "*The introduction of Basle II, together with the planned disposal of capital inefficient assets results in an anticipated regulatory capital surplus over the next 3 to 4 years. This surplus will …… permit capital repatriation of up to £300 to £400 million over this period. Such repatriation will follow the release of capital as a result of asset disposals and will ensure that available capital is sufficient to support existing rating agency credit ratings and maintain an appropriate mix of Tier 1 and Tier 2 capital*."

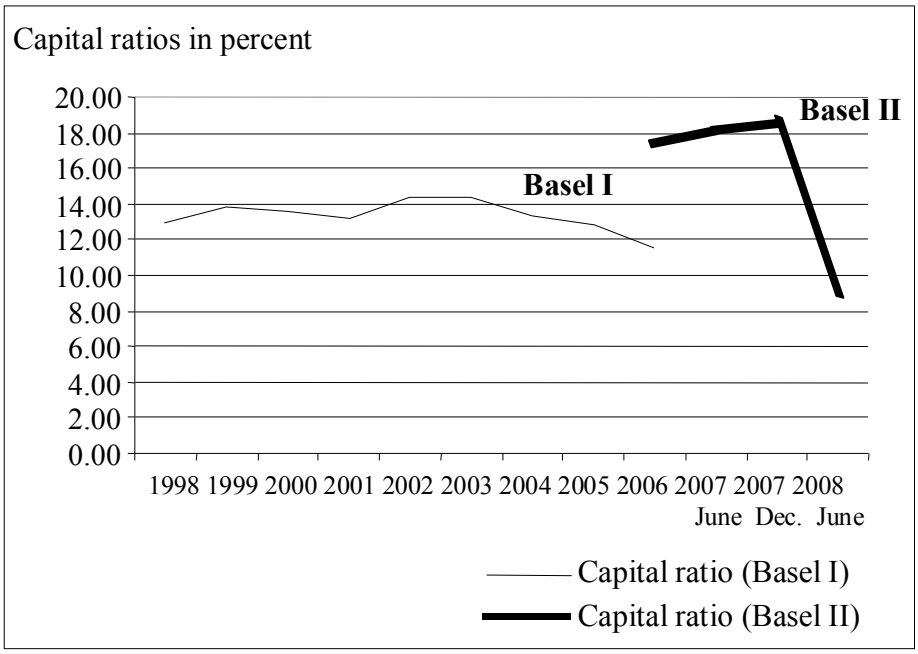
In the "Outlook" of the interim report 2007 Northern Rock wrote: "*We are the most cost efficient lender in our sector and we remain positive on our outlook for the medium term*".

Thus, Northern Rock not only complied with its capital requirements. It even had excess capital. The December 2006 capital ratio of 11.6 percent under Basel I increased to 17.5 percent under Basel II. By June 2007, the Basel II capital ratio had risen to 18.2 percent, far above the regulatory minimum capital requirements.

[37] Financial Services Authority, the regulatory body in Great Britain

[38] The risk weighting for residential mortgages reduced to mid-teens %, treasury assets to around half of Basle I requirements, also around mid teens %, reflecting – according to Northern Rock' Mid-Year Report 2007 - the low risk nature of these portfolios and personal unsecured loans to slightly below Basle I requirements.

Fig. 42: Capital ratios Northern Rock



Source: own presentations, Northern Rock, annual and interim reports

Two months after publishing the above cited report and positive forecasts the mortgage lender collapsed and seven months later was taken into public ownership.

In the following section I analyze the reasons for the quite unexpected run.

Northern Rock was the fifth largest mortgage lender in the U.K focused on residential with an almost eightfold growth of its balance sheet from 1998 to June 2007 (from £17.4 billion to £113.5 billion).

Northern Rock had four distinct funding sources – retail, non-retail, securitization and covered bonds. Securitization was the most significant source of funding for Northern Rock.

Flows of new funding and closing balances were disclosed as follows:

Fig. 43: Northern Rock's funding

£ millions	Retail	Non-Retail	Securitisation	Covered Bonds
2007 1st Half				
Net flow	1,734	2,509	5,632	2,194
Closing balances	24,35	26,71	45,698	8,105
2006 Full Year				
Net flow	2,527	2,876	10,628	2,733
Closing balances	22,631	24,24	40,226	6,202
2006 2nd Half				
Net flow	861	5,205	4,794	1,351
Closing balances	22,631	24,24	40,226	6,202
2006 1st Half				
Net flow	1,666	-2,329	5,834	1,382
Closing balances	21,773	19,57	36,334	4,965

Source: Northern Rock, annual and interim reports

At 31 December 2007, capital deductions in respect of securitized assets amounted to £537.7 million and were made equally against Tier 1 and Tier 2 capital resources.

Regulatory core Tier 1 capital fell to minus £17.1 million at 31 December 2008 (31 December 2007 – £1,316.4 million) and total tier 1 after deductions reduced to minus £110.4 million (31 December 2007 – £1,594.0 million). As a result, the Tier 1 ratio at 31 December 2008 was (0.4)% (31 December 2007 – 7.7%) and the total capital ratio was 10.8% (31 December 2007 – 14.7%).

Fig. 44: Capital ratios

	2008	2007
Core capital ratio (Tier 1)	-0,4 %	7,7 %
Capital /solvency ratio	10,8 %	14,7%

Source: Northern Rock, annual and interim reports

On 23 February 2009, the Company announced that it had concluded the strategic review of its business plan, in close consultation with the Government. The restructuring through a State aid of £3 billion was envisaged.

Resuming remark

The insights from the annual reports and the presented data are:

- Despite long period of regulatory capital ratios far above the regulatory required minimum, Northern Rock collapsed;
- The large securitization and resecuritization exposures did not draw the attention of the Bank's management prior to the financial turmoil;
- Only due to the public ownership Northern Rock survived.

12.5 Lehman Brothers

Lehman, one of the largest banks in the world, the fourth-largest bank in the U.S. and once the biggest U.S. underwriter of mortgage bonds lost ca. 75 percent of its market value in 2008. However, on May 31, 2008 Lehman's Capital was as follows:

Fig. 45: Capital ratios

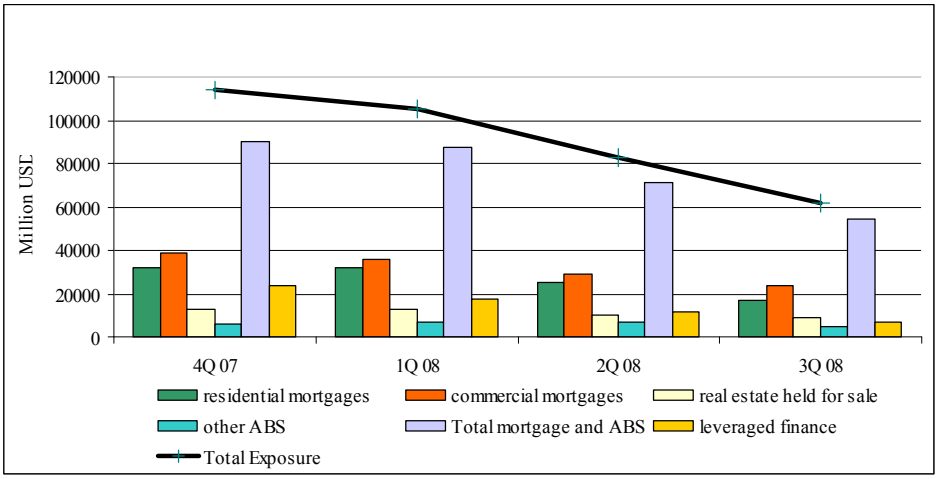
	May 31, 2008
Core capital ratio (Tier 1)	10,7%
Capital /solvency ratio	16,1 %

Source: Lehman Brothers' annual and interim reports

So obviously, via the regulatory capital ratio no indication of the coming run has been captured. Again, the troubles came from securitization notes.

During 2007, Lehman largely invested in residential mortgages, residential mortgage-backed securities (RMBS), and Commercial Real Estate (CRE) loans (see graph below).

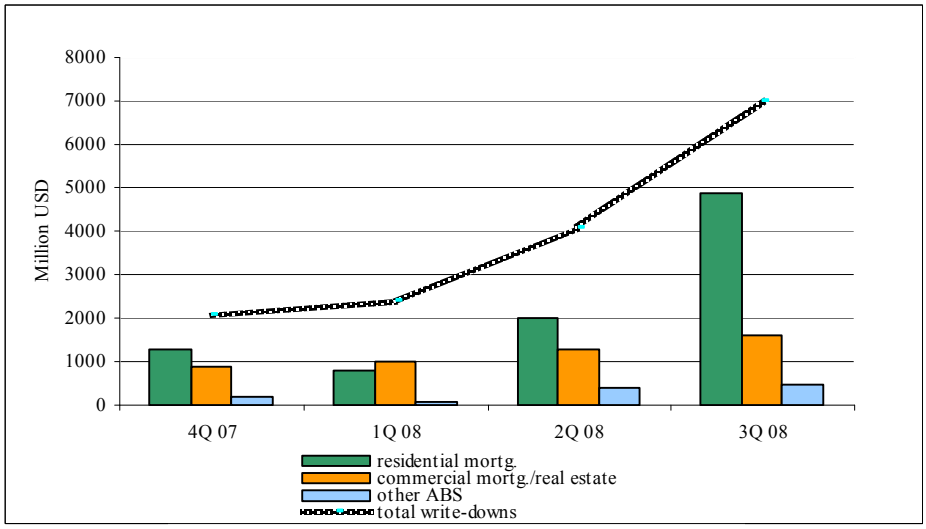
Fig. 46: Lehman's exposure to problematic investments



Source: own presentations, Lehman Brothers, annual and interim reports

What had to follow as an inevitable consequence of the turmoil started mid-2007 were the write-downs on these problematic investments.

Fig. 47: Lehman's write-downs on problematic investments



Source: own presentations, Lehman Brothers, annual and interim reports

Resuming remark

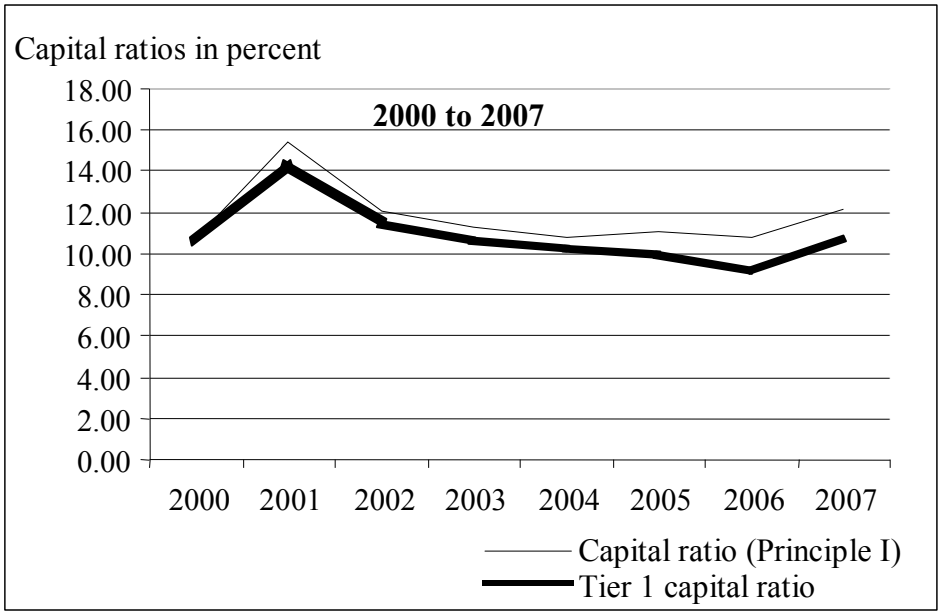
The insights from the annual reports and the presented data are:

- Despite long period of regulatory capital ratios far above the regulatory required minimum, Lehman Brothers collapsed;
- The large securitization and resecuritization exposures did not draw the attention of the Bank's management prior to the financial turmoil.

12.6 Merrill Lynch

As presented below the capital ratio situation with Merrill Lynch was more than optimistic measured by the regulatory capital ratios.

Fig. 48: Capital ratios Merrill Lynch



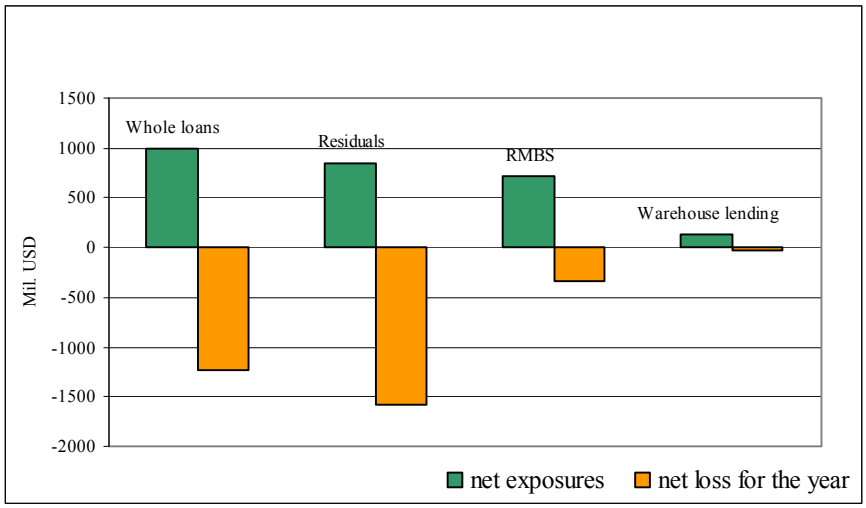
Source: own presentations, Merrill Lynch, annual and interim reports

However, Merrill Lynch was also strongly hit by the recent financial crisis. In July 2008 the bank announced a series of initiatives for enhancing its capital position, among others the sale of $11.1 billion U.S. super senior ABS CDO securities which represented a substantial majority of Merrill Lynch's CDO positions.

The bank had to book a write-down of a $4.4 billion loss associated with the sale of the CDOs. Until the end of 2007 Merrill Lynch incurred additional material losses due to write-downs in the value of financial instruments. According to Merrill Lynch's Annual Report 2007[39], the recorded significant net write-downs in 2007 were primarily related to U.S. ABS CDOs, sub-prime residential mortgages, and credit valuation adjustments related to hedging transactions with financial guarantors (mainly through credit derivatives) on U.S. ABS CDOs.

[39] p. 34 – 38 Annual Report 2007

Fig. 49: Sub-prime Residential Mortgage-related net exposures and losses per Dec. 28, 2007



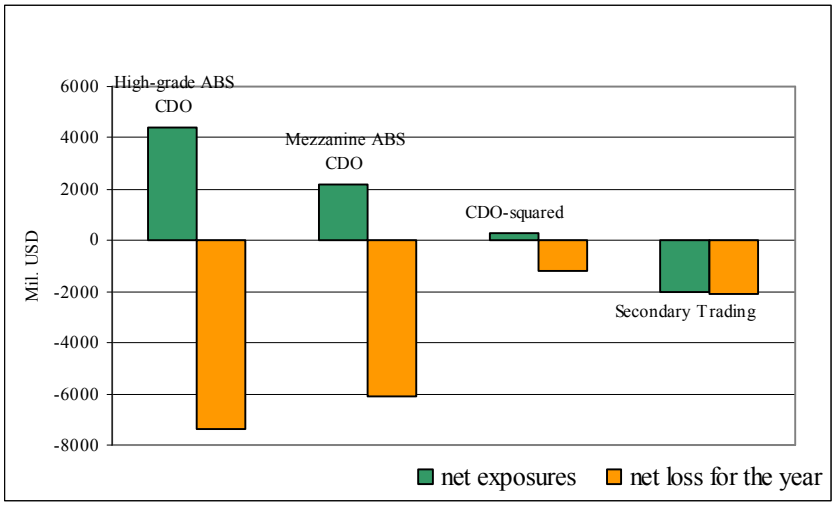
Source: own presentations, Merrill Lynch, annual and interim reports

Per December 28, 2007, the U.S. sub-prime residential mortgage net exposure (excluding Merrill Lynch's sub-prime residential mortgage-related securities portfolio) consisted of the following items:

- Sub-prime whole loans originated through the mortgage origination franchise and servicing platform First Franklin acquired in December 2006 and purchased pools of whole loans from third-party mortgage originators;
- Residuals - retained and purchased mortgage residual interests in subordinated classes and equity/first-loss tranche from the above residential mortgage-backed securitizations;
- Residential mortgage-backed securities (RMBS) - retained and purchased securities from the securitizations of loans, including sub-prime residential mortgages.
- Warehouse lending - collateralized revolving loan facilities to originators of financial assets, such as sub-prime residential mortgages typically serving as collateral for the facility.

In addition to the above U.S. sub-prime residential mortgage-related exposures, Merrill Lynch had exposure to various U.S. ABS CDOs on sub-prime residential mortgages and the so called secondary trading exposures on RMBS and CDO previously held in CDO warehouses awaiting securitization, retained securities from CDO securitizations, and related hedges.

Fig. 50: Problematic U.S. ABS CDO net exposures and losses per Dec. 28, 2007



Source: own presentations, Merrill Lynch, annual and interim reports

Resuming remark

The insights:

- Despite long period of regulatory capital ratios far above the regulatory required minimum, Merrill Lynch collapsed;
- The large securitization and resecuritization exposures did not draw the attention of the Bank's management prior to the financial turmoil.

12.7 Conclusions of the case study

The main objective of banking industry - to efficiently allocate capital to borrowers and businesses – was misapplied. Instead capital was distributed to anyone who wanted it.

It is obviously time to ask if the developments in current banking regulation and supervision such as the implementation of the Basel Accords based on the concept of Risk Weighted Assets with Capital Ratios being the center of banking regulation, are the right way of insuring financial stability. The core question is: Are the capital ratios calculated as a relation between risk-weighted assets and bank's equity the right way to supervise banks?

The concept of Capital Ratios as the center of banking regulation obviously failed, both on an individual bank's level, as well as with a system perspective regarding the cross-banking solvency stability.

This failure requires a deeper insight and more thorough analysis.

In fact, the capital ratios calculated up to date were mostly based on the Basel I Accord.

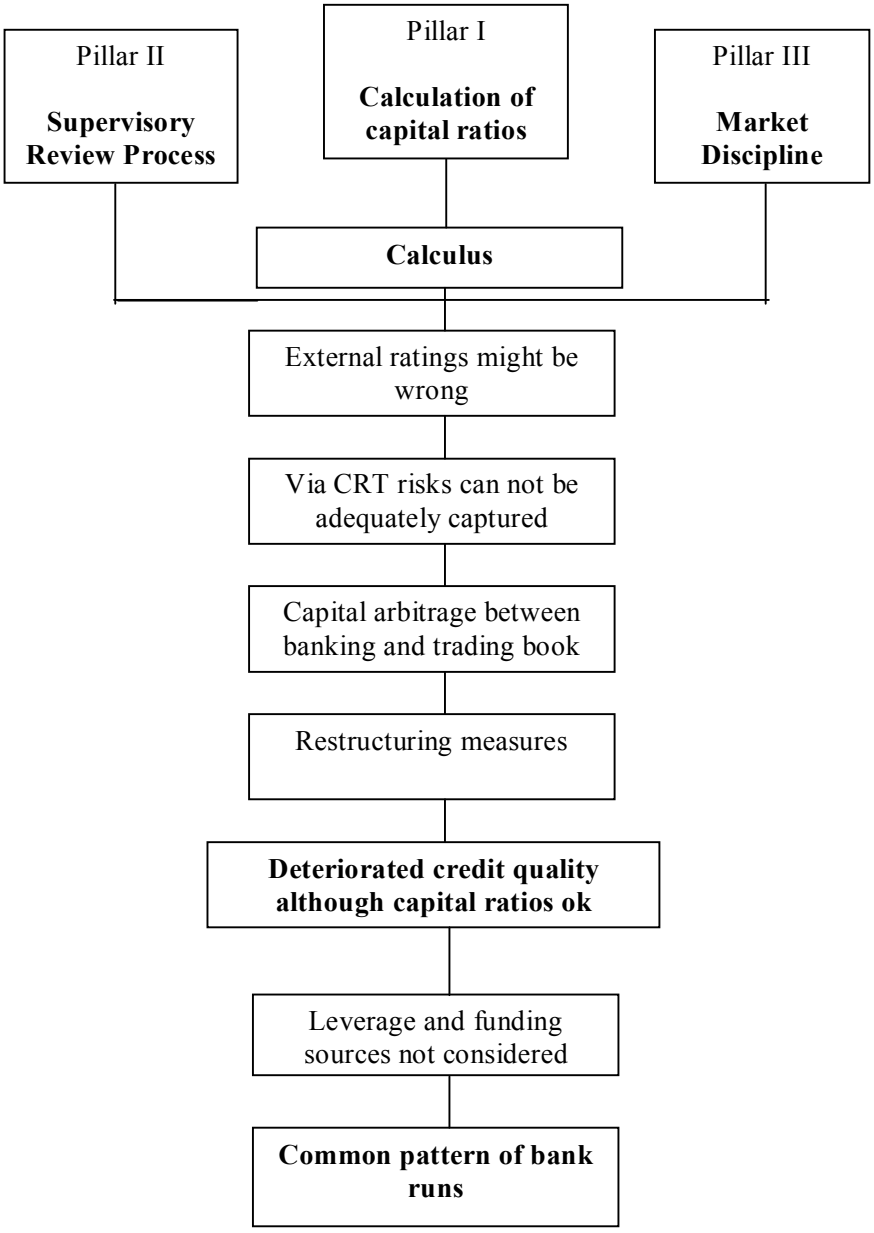
In the U.S. the implementation of Basel II was planned to start 2009 and only for certain banks. Generally, the scope and timeline for the implementation of Basel II in the U.S. strongly differentiates from the implementation in the rest of the world and is up to now still uncertain. It was proposed that only the largest U.S.-based banks be required to implement Basel II, with other banks being allowed to opt-in with supervisory approval. The U.S. began with the implementation in 2009, at least two years after Basel II implementation in most of the rest of the world.

In Europe, and more specifically as presented in the above examples in Germany and Great Britain, although the Basel II implementation had been already accomplished up to 2009, most of the explanatory data and ratios I referred to in the above examples were still based on Basel I because of the implementation time frame and the start of the financial crisis.

However, even if Basel II had been implemented before the financial crisis started mid-2007, it would not have captured the complex risks hidden in securitization and resecuritization exposures and not been able to prevent the financial crisis (as stated by different proponents of the Framework, see Klaas Knot in the previous chapter).

In the following figure I present the potential flaws stemming from the current regulatory rules according to Basel II that definitely lead to biases and deterioration in capital ratios. As a result capital ratios currently being the centre of banking regulation become flawed, insufficient and even inadequate in order to present an informative total picture of the capital situation of a bank.

Fig. 51: Critical assessment of capital ratios



Source: own presentation

First, the available external ratings for securitization and resecuritization exposures were – as long commonly acknowledged – wrong.

Second, Basel II was by its origin not meant to adequately capture the risk of complex structured finance products with double leverage such as resecuritizations.

Third, it is nowadays also commonly acknowledged that Basel II was not able to capture systemic and extreme risks which were the actual risks and some of the causes for the recent financial crisis. These "failures" of the revised Framework were presented in Chapters 10.

However, numerous early warning indicators at least of a systemic risk could have been identified by the national regulatory bodies, such as the German Banking Regulator Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and the Bundesbank, or the British Financial Services Authority (FSA).

In particular, the national banking supervisors and regulators receive the complete sets of annual reports from all operating banks as well as audit reports and further documentation regarding the full operating activity of banks. They not only have assess to detailed data on banking operations but are also authorized to audit it and interfere in order to counteract undesirable development in the banking and financial services sector.

For example, Bundesbank und Bundesanstalt für Finanzdienstleistungen (BaFin, Federal Banking Supervisory Office) are jointly responsible for banking supervision in Germany. This is regulated in the German Banking Law (Kreditwesengesetz, KWG). Bundesbank is involved in almost all spheres of Banking Supervision. It is responsible for the comprehensive assessment of all delivered annual reports, audit reports and other regulatory relevant issues. As opposed to the Bundesbank, BaFin is responsible for regulatory authorization issues, such as regulatory approvals, supervision and closing of individual financial institutions.

According to the German Banking Law (KWG), "*BaFin counteracts undesirable developments in the banking and financial services sector which may endanger the safety of the assets entrusted to institutions impair the proper conduct of banking business or provision of financial services or involve serious disadvantages for the national economy.*

BaFin may issue instructions to the institution and its managers that are appropriate and necessary to prevent or overcome undesirable developments at the institution which could endanger the safety of the assets entrusted to the institution or could impair the proper conduct of its banking business or provision of financial services.

The Deutsche Bundesbank and BaFin communicate to each other any observations and findings which are necessary for the performance of their respective functions. The cooperation and communications include the communication of personal data. The BaFin and the Deutsche Bundesbank are authorised to automatically access one another's database maintained for the purpose of performing their functions.

I argue that early warning indicators of systemic risk in the financial sector and signs of the coming turmoil were irresponsibly ignored at the time they were perceived.

Analogous regulations apply to the National Regulators and Supervisory Authorities in the rest of the developed countries.

A comprehensive analysis of the data available at BaFin and Bundesbank, which is partially derived from the officially disclosed information by banks and partially from reports available only to regulator and supervision bodies, would have provided a reasonable systemic overview of potential risks at least in the national banking sector.

Such an assessment of the bank sector data should be one of the main tasks of regulator and supervision bodies like BaFin and Bundesbank for the future. For example, numerous

credit relations, such as cross-banks loans, credit guarantees, among others credit derivatives, and credit exposures via liquidity commitments as well as investments in complex structured finance products were disclosed long before the sub-prime crisis.

Only one grotesque example presents Sachsen LB. According to the Annual Report 2005 of Sachsen LB (s. page 24) the wholly owned subsidiary of Sachsen LB - Sachsen LB Europe plc (SLBE), which holds a full banking license – was in 2005 already one of the biggest Asset Backed Securities-Investors in Europe. Even worse, the main responsibility for this Irish affiliate was the management of the Sachsen LB in Germany.

Some of the questions to ask are:

- Where was the German Regulator BaFin (or the Bundesbank) when Sachsen LB failed? Were they not in possession of a magnitude of data on the banking activities of Sachsen LB, and were they not obliged to react long before the financial crisis in order to prevent the failure of Sachsen LB?
- Was it adequate for a German Landesbank to be an investor in ABS at all?
- Why did the German supervisor allow a Landesbank affiliate to be one of the largest ABS-investors in Europe? It can never be in line with the concept of Landesbanken

12.7.1 The problem with Landesbanken

The business concept of the German Landesbanken is as follows.

The Landesbanken are state-owned regional institutions which act as centers for payment systems (Girozentrale) and liquidity providers for the savings banks in their regions (states) within the Savings Bank Finance Group. They serve as a link between the savings banks and their customers when it would be less efficient or economically impossible for the savings banks to provide certain products for a small number of customers. The majority of Landesbanken also service the financing needs of the public sector primarily as lenders for large commercially driven projects, e.g. infrastructure.

In practice, the state-owned Sachsen LB sank the taxpayer money in structured investments backed by U.S. sub-prime mortgages. The Bank traded asset-backed securities and Wall Street derivatives amounting to more than twenty times of its equity. Theses facts should have been timely addressed by the German regulatory authorities. But they were not.

Sachsen LB was the second German lender (after IKB, as presented at the beginning of this chapter) collapsing because of the sub-prime related losses. At times Sachsen LB's exposure to investment conduits was more than 17 billion Euros, equal to more than 10 times its core capital and more than one-quarter of its total assets.

Wasn't Sachsen LB a case where the German Regulator should have interfered long before the collapse was inevitable? In any case, a preventive action would have been possible.

The Sachsen LB's collapse in August 2007 is not only a proof of how far U.S. economy was able to spread its waste via repackaged mortgages. It is also a proof of an export of financial innovation with its risks not fully understood - neither by the investors (Sachsen LB, IKB etc.) nor by their Regulator. In the end, the German tax payer is paying for the U.S. credit bubble.

Landesbanken owned by the German states appeared to be even more vulnerable to the liquidity crisis than their private sector commercial bank peers like Commerzbank and Deutsche Bank, etc.

But was not this actually a regulatory failure?

Although Landesbanken are principally independent units as financial institutions according to the German Banking Act (KWG) their main characteristic is the backing by regional governments which in turn means that their high management, the executive boards, consists of politically appointed persons.

One important reason for Landesbanken to invest in commercial papers was, that up to July 2005 they largely used their advantage of borrowing money significantly cheaper than their banking peers not backed by state guarantees. With the abolishment of the state guarantees from July 2005 the hard competition from private banks brought Landesbanken to continue taking similarly big risks, even after they had stopped being backed by the state.

However, the know how and professional qualification for Landesbanken personnel had never been comparable with the bigger, private-sector banks like Deutsche which was far above the qualification level of Landesbanken personnel. Despite this fact Landesbanken participated in the capital market innovation as if they were big players.

For example, the WestLB – another largely hit German Landesbank - was, according to a survey by Standard & Poor's, the world's 14th-biggest provider of funds for asset-backed commercial papers.

This is an obvious regulatory failure.

Why did not BaFin prevent the excessive risk-taking at least in Landesbanken and other state owned institutions like IKB whose basic principle was not oriented to capital market transactions?

Furthermore, BaFin should have better controlled and restricted the other German non-Landesbank-banks and financial institutions. Analogous, the respective national Regulators like FSA and FED should have prevented the excessive risk-taking in their fields and countries of power.

In fact, standard measures of bank risk commonly used by regulators, such as the risk-weighted assets and capital ratios, failed to capture the systemic risk created and spread by credit risk transfer activities. Due to the diversification presumably achieved by securitization techniques, banks really lowered their capital requirements on an individual bank level. This allowed them to unhealthy extend lending and to largely contribute to the recent turmoil.

A Regulatory Rule for a Healthy Banking System should be introduced in order to limit the excessive risk taking as a relation of the value of bank's assets to its domestic economy as a whole.

The leverage ratio, as presented in the section Prompt Corrective Action is a prudent measure but obviously did not help U.S. banks escape the systemic collapses.

For these reasons, the recent crisis must be classified not only as a securitization crisis. It was also a crisis of professional incompetence and regulatory failure.

12.7.2 Prompt corrective action – did the U.S. supplement help?

Since my aim in this chapter is to demonstrate that capital ratios according to their current calculation methods are not sufficiently informative measure for bank’s insolvency, I present a U.S. supplementary measure to capital ratios – the Prompt Corrective Action.

Prompt corrective action (PCA) is a system of regulatory steps based on certain predefined benchmark ratios. The aim is – similar to the Basel Accords - to insure bank’s solvency.

However, PCA ignores risk-based capital requirements in its banks classification and solvency assessment. Instead, PCA introduces a reliance on the Tier 1 leverage ratio, which is defined as the ratio of Tier 1 capital to total assets.

According to PCA banks are classified as follows:

- "well capitalized," if its ratio exceeds 5 percent,
- "adequately capitalized" if its ratio is in the interval 4 percent to 5 percent,
- "undercapitalized" if its leverage ratio is in the interval 3 percent to 4 percent,
- "significantly undercapitalized" if its leverage ratio is in the interval 2 to 3 percent, and
- "critically undercapitalized" if its leverage ratio is below 2 percent.

Tier 1 capital includes common stockholder equity, non-cumulative perpetual preferred stock and minority interests in the equity accounts of consolidated subsidiaries.

The leverage ratio criteria and PCA requirements supplement the risk-based capital requirements introduced by the Basel accords in 1988. The table below shows how both standards are used in the United States to define how well capitalized a bank is; thus the average European bank would be classified as undercapitalized from 2000 to 2006 and significantly so in 2007, but this is not the case under risk-based measures[40].

Fig. 52: Prompt Corrective Action

Criteria for Classifying Banks as Adequately and Well Capitalized

	Risk-based capital ratios			**PCA measure**	
Capital classification	Total capital ratio %		Core capital ratio (Tier 1) %		Leverage ratio[41]
Well capitalized	> 10 %	AND	> 6 %	AND	> 5 %
Adequately capitalized	> 8 %	AND	> 4 %	AND	> 4 %
Undercapitalized	< 8 %	OR	< 4 %	OR	3 to 4 %
Significantly undercapitalized	< 6 %	OR	< 3 %	OR	< 3 %
Critically undercapitalized	NA		NA		< 2 %

Source: own presentation after Tatom (2008)

In short, if the leverage ratio falls from well capitalized to lower levels, regulators interfere in distributions of bank's funds or require more substantial actions. If the leverage ratio falls to the category "undercapitalized", the regulator requires a capital restoration plan from the banks, as well as restriction on asset growth. With leverage ratio under "critically undercapitalized", the bank must be closed.

Prompt corrective action's reliance on the leverage ratio is a departure from the risk-based capital standards adopted under the Basel Accords.

Gilbert (2006) has shown that large banks are more constrained by the leverage ratio than by risk-based measures, i.e. being well-capitalized is synonym to a higher level of capital than risk-based measures alone.

[40] "Prompt corrective action provisions: are insurance companies and investment banks next?, Tatom, John / A. Networks Financial Institute at Indiana State University, 30. May 2008, page 8

[41] Leverage ratio = Tier 1 capital / total assets

Major advantage of PCA is that the leverage ratio as a capital benchmark is simple and transparent to its users: banks, investors, and regulators alike, and implies a generally higher level of capital than the risk-based capital requirements as required by the Basel Accords.

However, despite the adoption and application of PCA U.S. banks did not show to have been more immune to failure compared to European and other banks.

Just one example is the capital ratio situation of Merrill Lynch. According to Merrill Lynch's Annual Report 2007 the following capital and leverage ratios were reported as of December 28, 2007.

Fig. 53: Merrill Lynch's selected ratios

Mill. USD	Well-capitalized minimum	Actual ratios per Dec. 28, 2007
Leverage ratio	5%	8,5%
Core capital ratio[42]	6%	10,78%
Capital ratio (total)	10%	12,20%

Source: Merrill Lynch annual report 2007

12.7.3 The future of banking?

The failures have shown that management of balance-sheets, banking operations, risk management techniques and even the payment schemes to managers must be changed.

However, it is premature to ask what the future of banking regulation looks like simply because the future of banking is currently unclear.

The future will be certainly different to different types of banks. The hit smaller banks which did not rely on state support will most likely disappear. What significantly changed for the bigger ones after the crisis is the government interference in their structures thanks to whom these banks received a chance to survive.

As a result governments are meanwhile practically incorporated in banking. In reality, many banks nowadays still exist solely thanks to the governments that supported them and thus helped to escape their bailouts.

The future of the banks which were largely supported by their governments is on the one hand secure.

On the other hand, the strong government involvement can itself be an uncertainty factor for a bank's future.

However, before planning their new kind of banking businesses, banks have to clarify under what circumstances governments will again leave the banking industry.

[42] Tier 1 capital ratio

13 Regulatory conclusions

The general trend of financial disintermediation and the innovations in credit risk transfer weakened market discipline to the point of a global economical distress.

New legislative and regulatory proposals should introduce robust rules to enhance the fundamentals of the securitization process, the principles for credit quality assessment of securitizations, and the standards for reporting, accounting and risk management of acquired securitizations.

The turmoil in the financial markets clearly demonstrated that borrowers take loans even if they can not afford it. It is also obvious that lenders must rigorously evaluate a borrower's ability to repay before extending a loan. In short, a robust regulation of the lending process is necessary.

What became clear with the financial crisis were the lack of understanding of risk/return characteristics of securitization techniques, the unreasonable pricing assumptions for these structures such as backward-looking models and opaque correlation assumptions and the adverse incentive structures. As a result, the pricing of risk obviously must wander to more experienced and more professional lenders than was the case up to date.

Supervisors must ensure that recipients of credit risk have adequate human skills and risk management systems that enable them to manage their credit risk exposures. A better counterparty risk management is also necessary.

Further, increased transparency of risk transfer, risk-related management compensation, and credible measurement of rating performance should be introduced in order to insure solvency of the single financial institution. This should be enabled through improved risk management and reporting standards.

The problems created by securitization can be mitigated in a number of ways.

13.1 Supplementary measures

The financial crisis has clearly shown that risk-based capital measure is insufficient for ensuring stability of the financial system. Supplementary measures beyond capital ratios and Basel II should be introduced.

Basel II was mainly designed for credit risks and for regulated institutions. However, the process of risks intermediation itself changed significantly. The process of setting financial networks comprising of securities houses, hedge funds and other types of multifunctional financial groups etc. falling out of the scope of banking regulation had aggressively accelerated since the Basel II process began.

Regulators must focus on the way in which capital adequacy and other supervisory techniques can be prudently and effectively combined. Regulators must ensure that the work on capital adequacy does not lead to overlooking the importance of liquidity management and the maintenance of financial stability.

Complementing the bank capital rules by rules on liquidity and leverage[43] is a meaningful measure to strengthen banking regulation.

The rationale behind liquidity constraint is that banks with more liquid assets are less vulnerable.

The rationale behind leverage is to limit banks indebtedness during booms, thus reducing the need to de-leverage in a downturn.

However, the runs of the biggest American banks which were subject to calculating leverage ratios is a proof that leverage constraint can solely be a potential complementary measure without a certain chance of long-term bank solvency.

Thus, it must be comprehensively assessed if the leverage and liquidity ratios as currently proposed by the EU can be really a meaningful tool for enhancing financial regulation.

Further on, the retention rule of 5 percent as recently proposed by the EU for securitizations' originators is obviously not sufficient to create incentives for a better monitoring of underlying risk in securitized portfolios[44].

13.2 Stop inventing new regulatory requirements to further increase complexity

"Keep it simple" would have been the better way to regulate banking.

As complexity in banking and financial regulation is already an indisputable fact, especially after the implementation of Basel II, the only reasonable development of further regulation is to keep the level of complexity constant and to stop unnecessarily increasing complexity through new and steadily developing supplemental requirements to the existing Framework Basel II. It is true that Basel II has its flaws. They should be corrected via simple supplemental rules instead of building further new complexity blasts.

I illustrate this by one of numerous examples. In the latest Stress Testing Proposal, BCBS requires: "*An effective stress testing programme should comprise scenarios along a spectrum of events and severity levels. Doing so will help deepen management's understanding of vulnerabilities and the effect of non-linear loss profiles. Stress testing should be conducted flexibly and imaginatively, in order to better identify hidden vulnerabilities. A "failure of imagination" could lead to an underestimation of the likelihood and severity of extreme events and to a false sense of security about a bank's resilience*."

The Committee calls on banks to avoid '**failures of imagination**' in identifying risks, but practically says nothing concrete about how to handle this problem. This typical approach of BCBS creates new problems.

Again, a very bright interpretation room is set with the term 'failures of imagination' in identifying risks. The next problem is, even if risks get imagined or invented, as urged by the Committee, no methodology is prescribed how to handle them. Factually, the proposed stress

[43] The U.S. already has in effect a leverage ratio constraint. In 1991, Congress enacted the Federal Deposit Insurance Corporation Improvement Act, known as FDICIA, which requires that banks have equity capital of at least 2 percent of total assets.

[44] On EU level there exist already various proposals for amending Directives 2006/48/EC and 2006/49/EC referring to securitization activities of financial institutions. For example the amendment to Article 122a requires for securitizers (originators) the retention of net economic interest of not less than 5 % of the nominal value of each of the tranches sold or transferred to the investors.

testing rules only burden the already burdened banking sector with further regulatory requirements since the Committee does not provide a quantification method for computing some additional capital.

So according to the Proposal, methodology has to be developed, subsequently thoroughly discussed with the regulatory authorities, in a next step approved and finally implemented within in-scope institutions. On top of it, managers' interpretation of stress testing results is also questionable.

So, that vicious circle should be stopped.

13.3 Reduce complexity in financial instruments

Financial engineering created securitized structures that gradually became ridiculously complex. Second- and even higher-tier-generation (for example resecuritization) then took place. After addition of numerous credit enhancements to the existing financial structures, neither the sellers of the multi-layer securitizations, nor investors knew what the factual risk properties of the generated structure really were.

Post-crisis, it became clear that banks were not aware of the nature and extent of the exposures to some of their off-balance sheet vehicles but also of securitizations positions on their balance sheets.

The off balance treatment of SPV, SIVs and Conduits facilitated the financial problems with securitizations.

It had been popular and widely acknowledged before the financial turmoil that off-balance sheet vehicles were primarily driven by arbitrage opportunities, including regulatory arbitrage[45]. In the case of securitization, these vehicles invested in high complex financial instruments with little or no transparency, which obviously led to a great increase in systemic risk.

A feasible solution is to take these special vehicles back on the balance sheet by their sponsoring banks, or alternatively solely the securitization exposures on vehicles' balance sheets to be sold back to banks.

In short, regulators must limit complexity of financial instruments that can be issued or held. Financial intermediaries, on- and off-balance sheet vehicles bearing opaque risks must be subjected to adequate capital requirements, which was not the case by now.

13.4 Implications for handling extreme risks

As presented in Chapter 10 some risks can not be anticipated. Such risks can not be captured by models based on historical data, neither the market risks via models such as Value-at-Risk, nor the credit risks via the Internal Rating Based Approaches set with Basel II. However, as long as no nature disasters like hurricanes or Sept., 11th - which are really unpredictable and unforeseen - are meant, a profound understanding of financial products, financial markets and financial innovation (as opposed to the reigning incompetence during the financial crisis), combined with adequate internal controls and risk management procedures are helpful measures to cope with unanticipated risks.

As presented in sections 10.7 and 13.2, post-crisis the Committee proposed more rigorous stress testing rules. This was an attempt to capture extreme risk defined as "low probability

[45] The primary objective of the outsourcing financial activities to external off-balance sheet vehicles is to avoid minimal capital requirements, liquidity requirements, reporting and governance requirements, or taxes.

high impact events" which represent unanticipated risk. According to BCBS[46] "*the financial crisis has shown that estimating ex ante the probabilities of stress events is problematic. The statistical relationships used to derive the probability tend to break down in stressed conditions*."

It might be true that stress tests consider adverse market and product conditions to calculate a potential extraordinary loss. However, stress tests are **NOT** a measure for setting capital charges. They just produce a number, under which any capital would be insufficient for keeping an institution solvent under extreme conditions.

In fact, the only meaningful measure that could be produced by stress test scenarios can be based on the analysis of profit and/or loss drivers within a product group or business field encompassing comparable financial products and stressing these profit and/or loss drivers. Defining profit and/or loss drivers as a result of such analysis and in a further step "stressing" exactly these growth drivers can be a potential way for producing halfway meaningful stress test results. These however can not be a measure for setting the regulatory capital.

In short, regulatory capital is in the context of stress tests is an inadequate measure for extreme risks.

Stress scenarios can only be an indicator within an early warning system but not a reliable methodology or approach for handling extreme risk.

Through more prudence should be finally admitted that there will always be limits in banking regulation. Inventing of new formulae for charging extreme risk is to a large extent a useless task and should be better stopped analogous to increased complexity in financial products and complexity in regulatory requirements.

13.5 Ratings and rating agencies

As presented in Chapter 9, the CRAs ratings in combination with the internal investment management requirements for institutional investors to adhere to investment grade levels largely contributed to the growth of securitization markets.

The shortcomings in rating delivery were already presented in Chapter 9. Measures for improving rating methods and agency models were already taken. The understanding that credit quality of securitizations differs from that of corporate bonds is already wide spread in the CRA and the financial industry.

What is not done yet: it is urgently necessary to significantly change the current rating industry.

13.5.1 Quasi-regulatory role of CRA with Basel II

The official quasi-regulatory function of credit risk ratings in Basel II strengthened CRAs' influence on investors and their role in the ratings "production process". The granting of a "Basel II-eligible"-status to S&P, Moody's and Fitch allowed them to become de facto regulators of structured finance.

The ratings industry does not deserve the semi-official role granted via Basel II. This power combined with the recent failure of the ratings industry point out at an urgent need for significant reform, if not for a total industry overhaul.

[46] "Principles for sound stress testing practices and supervision", January 2009

In best case, this quasi-regulatory role of CRAs should be abolished altogether in the long-run.

International CRA reform must be conducted to cure the financial industry.

Generally, the removal of ratings-based rules could prevent the recently experienced regulatory arbitrages achieved through ratings. This would force banks and their regulators to examine underlying investments based on own thoroughly conducted analyses and not rely to CRA evaluations.

Although Basel II and with it a large reliance on CRAs ratings were just implemented, from post-crisis point of view less reliance on ratings would be the best way to sanitize financial industry.

Since it would be too superficial to think that the already implemented Basel II capital requirements and capital ratios can be taken out of force, a meaningful use of the currently implemented rules must be agreed upon.

Even if a complete cancellation of CRAs' ratings for capital regulation can not be introduced in the short run also because of the high costs recently incurred with the implementation of Basel II, for the CRA industry to continue in its current form, changes in their regulation are urgently necessary.

13.5.2 Robust regulatory oversight for CRAs

As long as CRAs deliver the most significant input parameter for calculating capital requirements, they should be put under regulatory oversight analogous to the regulated users of their ratings – the banks. There are no reasonable considerations for banks' internal rating based approaches to be subject to regulatory approval and external ratings delivered by CRAs not to be.

Both SEC and EU are taking steps to invoke stricter regulation after the failures of the CRAs. In the U.S. the Credit Rating Reform Act has brought CRAs under supervision of the SEC, requiring their registration.

One possible solution is to take the CRAs' methods for generating regulatory conforming ratings under the regulation for financial institutions.

This can be introduced only via strict regulatory requirements and special audits through a specialized international regulator with a combined expertise in the fields of

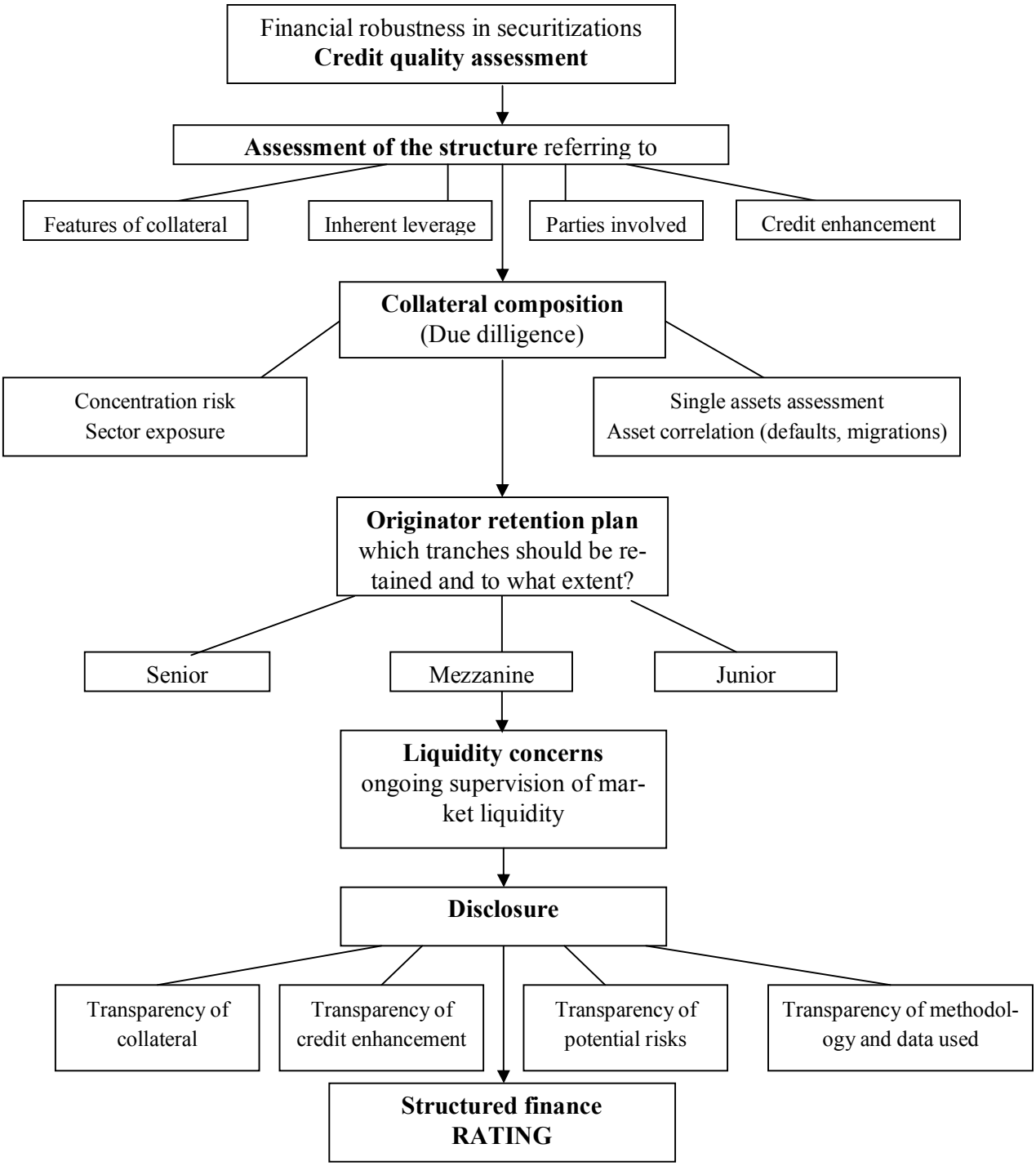
- banking operations,
- banking regulation and
- rating methods.

What I mean is a detailed and expertise audit of CRAs' methodologies, data used and control over their overall assessment of structured finance structures. An exemplary illustration of my proposal is presented in the graphic below.

Although it seems a big new challenge for banking regulation, it seems reasonable to authorize regulatory bodies regulating methodical and technical details in the CRAs rating methods.

This new regulatory approach to CRAs should be quite different from the current criteria for eligible ratings as currently defined in paragraphs 90 ff. in the Basel II Accord (2004). These were partially discussed in Chapter 9.

Fig. 54: Critical assessment of the process for generating eligible structured finance ratings structured finance ratings



Source: own presentation

13.5.3 Remuneration structures

External remuneration schemes

The first major conflict to be handled is that of interest between investors and rating agencies, paid by the issuers. The only benefit of this issuer pay model is that CRAs ratings are available to direct investors for free.

A solution to ratings shopping and the influence exerted by issuers on CRAs is to revert to the subscriber model, where investors pay for information.

A compromise as a mix of the current remuneration model and the subscriber model is to require agencies to derive a given percentage of revenues from investors. This would ensure that the CRA and investor interests are more closely aligned.

Internal remuneration schemes

Another aspect with the remuneration within the CRA is the up to date performance, which is relevant for employees' compensation. This is measured by the fee income of the agencies. Employees of rating agencies should be compensated independently of agency fee income. Less performance dependence of compensation might be a quality signal by investors. The incentives of the compensation systems used by the rating agencies should be assessed, for example by the national regulator.

13.5.4 Competition in the rating industry

Impediments to entering the market have allowed the big three leading CRAs to dominate the global rating industry. The entry barriers to the rating market should be removed.

If the industry had been less oligopolistic, the competitive pressure would have led independent parties to audit the models and criteria on which individual ratings were based.

13.6 Regulation for systemic risk urgently needed

Systemic risk as a threat to financial stability was pre-crisis perceived to be typical for banks. Today, with the post-crisis knowledge and insights, it is widely recognized that the process of securitization has changed that perception.

The substantial under-pricing of the credit risk in securitizations and the wrong notion that a large portion of the credit risk in sub-prime securities was idiosyncratic and hence diversifiable generated an excessive demand for sub-prime issuance.

Post-crisis, it is widely recognized that the greater portion of this risk was systemic. Indeed, the agencies failed to adequately predict performance because of their wrong empirical valuation models. However, some other factors were not adequately addressed as well.

Leverage is clearly a factor for generating systemic risk in an economic sector. Prudent leverage is a valuable financial tool but excess leverage is a threat for the financial system and any business. Indeed, overleveraging i.e. doing business with high ratio of borrowing in relation to equity, was a key factor for converting the initial sub-prime turmoil in 2007 into a financial bubble in 2008. The strongest leveraged financial intermediaries in the current financial system are broker-dealers and hedge funds.

Another danger for the financial system is the successively built shadow financial system. The key components of the shadow financial system are unregulated financial instruments such as off-balance-sheet entities and non-bank institutions such as hedge funds, asset manag-

ers and private equity funds. As presented in this work exactly these market players aggressively entered the securitization market in recent years and largely supported the financial bubble. Adequate monitoring of counterparty risk, adequate risk management practices and reporting standards completely failed for these market participants.

This shadow financial system is a source of significant systemic risk and at the same time mostly outside the scope of the financial regulation. In addition, exactly these non-bank institutions brought the great leverage excess and thus facilitated the combination of both systemic risk drivers (leverage and shadow financial system) to excessively multiply systemic risk within the financial system.

Special attention should be paid to certain non-bank institutions with extremely high leverage strategies meanwhile also invested in securitizations - the private equity companies. Since most of them are not subject to disclosure requirements large securitization tranches are still hidden on their books. This is not only a thread for the single private equity companies but also a systemic thread to the economy where these companies expand because large hidden risks may still further inflate the financial bubble.

Standard setters and supervisors should define the regulatory treatment for non-bank financial institutions. Comprehensive risk management practices and risk reporting should be required not only for large financial institutions, but also for entities that so far have managed to stay outside the reporting obligations set by supervisors, such as hedge funds, or offshore bodies.

Sector-specific information on the exposure of the banking sector to particular risks is another issue that should be made transparent. A single bank may be strongly exposed to some sector specific risks, such as automobile or mortgage financing, without endangering financial stability of the whole economy if these risks materialize. However, if the banking sector as a whole is systematically exposed to certain risks, these risks may destabilize the financial system as a whole. Thus, sector-specific information can be a useful warning signal for banks ready to enter those risks. Central banks and supervisors should be able to follow the allocation of risk exposures in financial markets, which is currently not the case.

Meanwhile it is almost impossible for regulators to capture the real dynamics of capital markets. The lesson to learn is that Systemic Risk must be timely identified and regulated.

Practically, today no regulatory authority monitors if financial institutions or products generate and pose systemic risk to the economy. This issue must be accordingly addresses. Systemic risk should be timely managed by regulators in order to avoid financial crisis such as the disaster of 2007 and 2008.

Otherwise the taxpayer practically bears the consequences of a systemic turmoil.

13.7 Implications of securitization products for financial stability

In this section I solely summarize that securitization techniques have largely contributed to inefficiency and destabilizing the financial system.

According to the academic literature on securitization besides its advantage to “save” capital, securitization products were perceived to improve financial stability by dispersing risks among many investors[47]. Duffie argues that if credit risk transfer leads to more efficient use of lender capital, the cost of credit is lowered, presumably leading to general macroeconomic benefits such as greater long-run economic growth.

[47] For example according to IMF in “Influence of credit derivatives and structured credit markets on financial stability” or to Duffie (2008)

Such theories are nowadays questionable.

The most significant issue is that individual banks indeed became less risky but at the same time generated greater risks to the financial system.

As I detailed presented in Chapter 7, lenders transferring significant exposures to a borrower's default have less incentive to monitor the borrower and control his risk-taking.

Thus, securitization divorced risk from controls by isolating the securities from the underlying collateral and allowed for a continued segmentation of the lending process which stretched out the lending process.

This anomaly resulted in a raise of total amount of credit risk in the financial system and led to inefficient economic activities by borrowers.

A further argument against the long-run benefits of securitization is the presented high complexity of credit risk transfer products which complicates their valuation and analysis for investors and rating agencies. Even specialists in securitization notes like CDOs proved to be incompetent in valuation of their risks and default correlations. Default correlations remain the weakest point in credit risk transfer products.

Financial innovation in credit risk transfer led to reduction in the degree to which credit is intermediated by banks in relation to hedge funds and asset managers. This in turn de facto resulted in lax underwriting guidelines and a loss of internal controls on the issuing side. As a result, the long-run macroeconomic growth was even threatened.

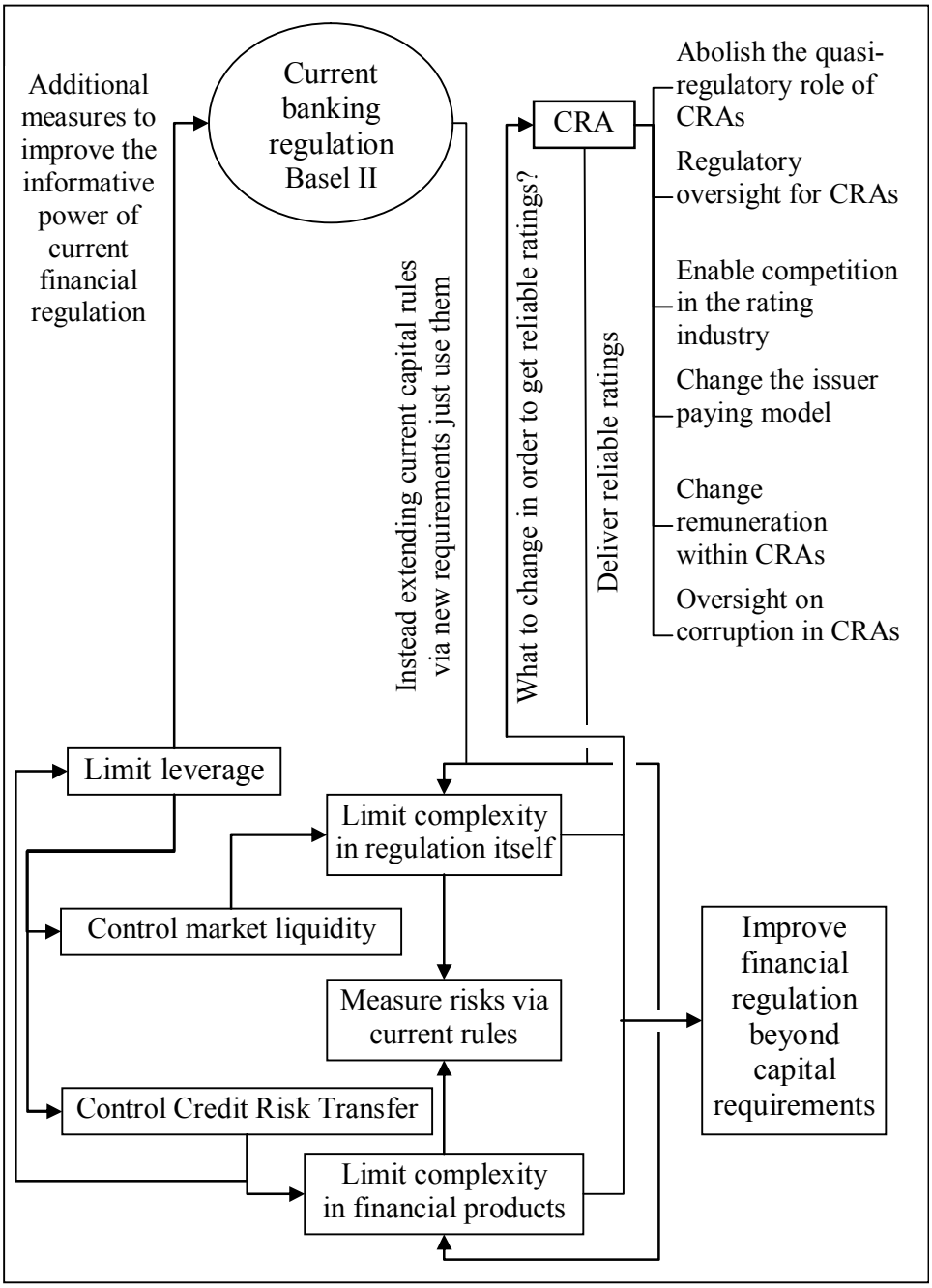
In fact securitization brought a magnitude of agency problems. The insights of the subprime crisis in the U.S. mortgage market and the subsequent total financial turmoil show that securitization techniques in fact ruined financial markets instead of improving capital market rigor and discipline which lies to a great extent in the principal agent deficiencies inherent within securitizations.

Securitization markets as they have been operating until today brought a negative net macroeconomic effect and largely damaged the global economy.

With regard to the prime originator of securitization activity – the United States - another shortfall of securitization activity must be defined. Securitization practically increased the general indebtedness of all Americans because of the cheapness of credit.

In the following graph I summarize my recommendations and partial solutions expressed in this chapter.

Fig. 55: Improving financial regulation



Source: own presentation

14 IASB response to the financial crisis

This chapter highlights some of the accounting aspects of securitization techniques which contributed to the recent financial crisis, e.g., valuation, non-consolidation and disclosure. Further on, it deals with the planned or partially introduced accounting changes in IFRS related to securitizations and aiming at improving transparency for users of accounting standards.

The International Accounting Standards Board (IASB) is reviewing accounting issues arisen from the global financial crisis. The IASB is working closely with the US Financial Accounting Standards Board (FASB) in order to ensure global consistency.

In the next paragraphs I present an overview of the IASB activities related to the crisis and in particular to securitization activities.

However, it must be clearly stated at the beginning of this chapter that most of the presented accounting rules and proposed changes have currently solely the preliminary status of exposure drafts and/or IASB tentative decisions. For that reason it does not make sense to elaborate a detailed presentation of currently relevant IFRS rules for the accounting treatment of securitization transactions which will be surely soon over rolled. This would be surely a very valuable contribution to theory if the rules were in their final versions.

14.1 Background on securitization accounting

The typical characteristics of securitization techniques make considering them within the traditional accounting framework very difficult and often subject to needed case to case assessment of the respective structures in order to adequately apply existing accounting principles. This is the case because securitization is a process with its own standards of data collection, measurement and reporting. It represents either sale or secured financing and at the same time can be structured on-balance or off-balance sheet with some risks transferred and others retained thus making the application of accounting and disclosure principles challenging for users

Generally securitization accounting treats issuers and investors separately. This also means that the terms referring to both sides of the transaction are asymmetrical, i.e. the results of a securitization process are debt securities for which accounting and reporting rules had generally long been existent. However, the mere valuation for example at fair value had often been – in various cases also pre-crisis - a very problematic issue because of the lack of active or liquid market for the securities.

The main challenge for national and international accounting bodies had however been to develop accounting and reporting rules for the transformation of part of the entity's balance sheet and transfer of assets to a self-liquidating off-balance sheet special purpose entity.

For companies adhering to U.S. GAAP, FASB 140 and FIN 46R were applied until now. For companies applying IFRS mainly IAS 39 *Financial Instruments*, IAS 27 *Consolidated and Separate Financial Statements* and related interpretation SIC-12 *Consolidation of Special Purpose Entities* were applicable to securitizations.

Worth noting is that both accounting worlds (FASB and IASB) did not use the same **concept of a "transfer"** for the underlying assets within a securitization transaction.

In the IFRS world, the general rules of IAS 39 for Derecognition following a transfer had to be applied. Up to now the accounting assessment whether a transfer qualifies for derecogni-

tion did not directly depend on whether the transfer is directly to investors in a single step or goes through an SPE that transfers assets or issues beneficial interests to investors. Also, the legal isolation was not a requirement which meant that in IFRS there was no concept analogous to FASB 140's QSPE (Qualified Special Purpose Entity).

According to IFRS securitizers first consolidated all subsidiaries according to IAS 27 and SIC-12[48] and then evaluated the transaction in its totality.

Whether the transfer qualifies for full, partial or no derecognition depended on the proportion of risk and rewards transferred to the investors compared to the amount retained by the transferor.

If substantially all the risks and rewards of ownership of the financial asset were transferred, the transferor derecognized the financial asset and recognized separately as assets or liabilities any rights and obligations created or retained in the transfer.

If substantially all the risks and rewards of ownership of the financial asset were retained (i.e. the transferor continues to absorb most of the likely variability in net cash flows), the transferor continued to recognize the financial asset and an associated liability for the proceeds.

If neither the transferees taken together nor the transferor had substantially all the risks and rewards of ownership (e.g., a significant amount, but not substantially all, of the risks and rewards have been passed), the transferor either (i) derecognized the transferred assets and recognized separately as assets or liabilities any rights and obligations created or retained in the transfer, if the transferor had not retained control of the financial assets or (ii) continued to recognize the financial assets only to the extent of its continuing involvement in them, if the transferor had retained control of them.

14.2 Background on the current changes for reducing complexity

The Financial Accounting Standard Board (FASB) and the International Accounting Standards Board (IASB) were considering how to simplify and improve standards for financial reporting of financial instruments.

They reasoned that complexity exists in several areas, including measurement attributes, derecognition, classification as liabilities (or assets) and equity, and presentation and disclosures. Both financial accounting bodies (FASB and IASB) decided that addressing all these areas in a single effort could not simplify or improve financial accounting and reporting standards in the foreseeable future. Therefore, the issues were separate into smaller, more manageable and efficiently groups.

According to IASB, one cause of complexity is that financial instruments themselves are complex. However, the real cause of complexity was seen in the fact that the standards for financial instruments contain many alternatives, bright lines and exceptions that often obscure the underlying principles.

The fair value measurement has long been seen as a controversial issue. Some point out that fair value measurement provides timely information about the effects of changes in mar-

[48] SIC-12 requires companies to consolidate SPEs that they, in substance, control. Examples of when control is deemed to exist in substance include securitization SPEs where the company has a right to a majority of the benefits or is exposed to significant risks of the SPE, even if this is via an "auto-pilot" mechanism. Thus SIC-12 required most outstanding securitization originators to consolidate the issuing securitization vehicle due to retention of excess spread and first loss pieces.

ket prices on business enterprises. Others say fair value measurement is inappropriate for financial instruments traded in illiquid markets (I personally adhere to them).

In March 2008 the IASB published a Discussion Paper (DP) *Reducing Complexity in Reporting Financial Instruments,* which discusses the main causes of complexity in reporting financial instruments and provides some proposals on possible intermediate and long-term approaches to improving financial reporting and reducing complexity. The DP discusses some possible intermediate approaches to simplifying hedge accounting and measurement of financial instruments in general. It explains why the IASB has established measurement of financial instruments at fair value as its long-term objective and identifies some of the impediments to achieving that objective. The DP focused on how financial instruments should be measured and, to a lesser extent, addressed how to account for derivative instruments.

The definition of fair value was seen as crucial and for that reason set out of the scope of the DP. Instead the IASB had set up an ongoing project to establish general principles in determining fair value.

IASB acknowledged that current problems arise from: (a) the many ways financial instruments are measured; (b) hedge accounting; (c) the scope of standards for financial instruments and the definition of financial instrument; (d) derecognition of financial instruments; (e) presentation and disclosures; and (f) other issues (e.g. unit of account). However, the DP did not address the problems set out in (c)–(f).

For example, regarding the many ways for measuring financial assets one of the following methods – without exhausting the range of possibilities! - was applicable: (i) Equity method, (ii) Consolidation – recognition of individual assets and liabilities of the issuer of the equity instruments, (iii) Fair value with gains and losses in earnings, (iv) Fair value with gains and losses in other comprehensive income until realized, (v) Fair value with gains and losses in other comprehensive income until realized except required impairment losses that are reported in earnings immediately, (vi) Fair value with part of the gains and losses in earnings and part of the gains and losses in other comprehensive income (cash flow hedge accounting), (vii) Cost less required impairment losses that are reported in earnings, etc.

Even according to IASB, some of the measurements described were an attempt to mirror a current estimate of value, others to portray original cost with various adjustments, some just presented a mixture of the two and others were the result of the calculations that produced the number. The applied measurement could also change over an instrument's life.

In short, the many ways of measuring financial instruments created problems for preparers and users of financial statements, for their auditors, standard-setters and regulators.

The IASB saw the many ways of measuring financial instruments and the associated rules as one of the main causes for the current complexity within accounting. For that reason, the IASB discussed to measure all types of financial instruments within the scope of a standard for financial instruments in the same way (at fair value) as a long-term solution for the measurement-related problems. The accounting bodies (IASB and FASB) discussed various possibilities for improvement, simplification and convergence. Most have been rejected because they were not sufficiently significant to justify the cost and effort involved.

However, since the general fair value measurement seemed to bring various issues and concerns that expected to take a long time to resolve, some intermediate approaches besides the long-term objective of the general fair value measurement for reducing complexity more quickly were discussed.

Some possible intermediate approaches for improving and simplifying measurement but also hedge accounting requirements discussed in the DP were:

(a) amending measurement requirements e.g. by reducing the number of categories of financial instruments;

(b) replacing the existing requirements with a fair value measurement principle and some optional exceptions to fair value measurement; and/or

(c) simplifying hedge accounting.

In the following sections I present in more detail the drafted proposals for reducing the number of categories of financial instruments and their measurement.

14.3 Overview of changes with relevance to securitizations

14.3.1 Fair value

Although it has long been an issue, the financial crisis finally showed the difficulties in estimating fair value for illiquid financial instruments or such traded in illiquid markets. In October 2008 the IASB published guidance on the topic. The IASB set up two separate projects in this regard: *Fair Value Measurement* and *Financial Instruments / IAS 39* which are further presented in sections 14.3 and 14.4.

14.3.1.1 Fair value measurement

On 28 May 2009 the IASB published an exposure draft *Fair Value Measurement* as an IFRS on fair value measurement guidance, with public comments due to 28 September 2009. The ED on *Fair Value Measurement* was the IASB's response to the concerns raised during and after the financial crisis referring to estimating fair value in illiquid markets.

The exposure draft is largely consistent with the FASB No. 157 Fair Value Measurements, including related guidance and is also consistent with the report published by the IASB Expert Advisory Panel "*Measuring and disclosing the fair value of financial instruments in markets that are no longer active*", October 2008.

14.3.1.2 Financial Instruments / IAS 39

On 14 July 2009 the IASB published an exposure draft *Financial Instruments: Classification and Measurement*. The replacement of IAS 39 is intended in order to improve the usefulness of financial statements for users and simplification of the requirements for financial instruments accounting.

On 12 November 2009 the Final Standard IFRS 9 *Financial Instruments* dealing with *Classification and Measurement* was issued. On 5 November 2009 IASB issued an Exposure Draft ED/2009/12 *Amortized Cost and Impairment*, which is the second part of the IASB three-phase project to replace IAS 39 *Financial Instruments: Recognition and Measurement* with a new standard, to be known as IFRS 9 Financial Instruments. A detailed presentation of the project follows in section 14.5.

14.3.2 Accounting for off balance sheet vehicles

The post crisis issues related to off balance sheet vehicles were divided by IASB into two problem areas: *Consolidation and Derecognition*.

In terms of *Consolidation* the crisis has shown that some entities had not accounted for all the entities they controlled, for example special purpose vehicles (SPVs) involved in securiti-

zation transactions. Although the consolidation project had started long before the financial crisis, it was "on hold" and got effectively accelerated post-crisis. In December 2008 an exposure draft (ED) of a proposed standard was issued by IASB which intends to tighten the definition of control so that entities account for all other entities that they control, strengthen the control notion applied to structured vehicles (SPVs) and improve disclosure requirements for off balance sheet entities.

Regarding *Derecognition* it got clear during and after the crisis that some entities did not account for assets they still control. Since this deteriorates the financial presentation for users, in March 2009 the IASB published an exposure draft (ED) *Derecognition ED/2009/3* comprising proposed amendments to IAS 39 and IFRS 7 which reviews when entities should stop accounting for assets transferred and sets tighter disclosure requirements.

14.3.3 Disclosure according to IFRS 7

With the financial crisis it turned obvious that users of financial statements were not adequately informed on how entities estimated the fair value of their financial instruments especially in the cases when only limited market data was available to support those estimates. Further on it turned out that the current disclosure requirements for liquidity risk were not adequate as well. After an exposure draft dated 15 October 2008, in March 2009 the IASB published enhancements to the existing disclosure standard aiming at improving disclosures about fair value measurements of financial instruments and about liquidity risk.

14.4 Fair value measurement

14.4.1 Background

One issue to be addressed has long been the fact that the guidance on how to measure fair value was dispersed across standards and in some cases inconsistent. For that reason IASB decided to create a single standard on measuring fair value for all the cases where existing standards require or permit fair value.

In May 2009 the IASB published an ED *Fair Value Measurement* based on the guidance published as a result of discussions by an Expert Advisory Panel created by the IASB in 2008.

14.4.2 The proposed changes

As a part of issuing the ED *Fair Value Measurement*, the IASB undertook a standard-by-standard review of IFRS to identify all existing references to fair value. The ED clarifies the definition of fair value as (i) the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date and (ii) exit price. The ED presents a single framework for measuring fair value as opposed to the previous guidance which was dispersed throughout many standards and was not consistent. The ED however, does not indicate in which standards fair value is used; and does not extend the use of fair value. Further on, the ED sets enhanced disclosures when fair value is used.

14.4.2.1 Definition and attributes of Fair Value

The ED *Fair Value Measurement* introduces the following terms and definitions:

Regarding the definition of Fair value

- *Characteristics of the asset/liability* - A fair value measure is performed for a particular asset or liability and, therefore, considers only the characteristics of the asset or liability that market participants would consider when determining a price at the measurement date. Conditions specific to the entity are not taken into account.
- *Orderly transactions* – Assumes exposure to the market for a period to undertake usual marketing activities. It is not a forced transaction. Additional guidance is given as to how to determine whether a transaction is forced.
- *Most advantageous market* – A fair value measure reflects a transaction taking place in the most advantageous market to which the entity has access. This is one that maximizes the amount that would be received to sell the asset or minimizes the amount that would be paid to transfer a liability after considering transaction and transport costs. This assessment is made from the perspective of the reporting entity, and is presumed to be the market that the entity would normally enter into such a transaction. The principal market (the market with the greatest volume and level of activity for the asset or liability) may be assumed to be the most advantageous market if this is accessible by the entity. While transaction and transport costs are relevant to identify the market, they are not considered in determining the fair value.
- *Market participants* - The reporting entity is a market participant, but it is not the only market participant to consider when measuring fair value. Market participants are independent buyers and sellers, knowledgeable about the asset or liability, able to enter into a transaction and willing to enter into a transaction (not forced or compelled). A fair value measurement uses the assumptions that market participants would take into account.

Regarding the application of the new fair value definition to assets, the fair value must be based on the *highest and best use,* and possess the following characteristics according to the ED

- Maximizes the value of asset that is physically possible, legally permissible and financially feasible
- Determined from perspective of market participants - does not consider the intended use by the entity
- 'In-Use' valuation[49] premise if highest and best use is in combination with other assets or liabilities
- 'In-exchange' valuation premise if highest and best use is on a stand-alone basis (required for financial instruments)
- If used with other assets in a way that differs from highest and best use, the incremental value is recognized as part of the fair value of the asset to which it relates.

The ED notes that financial instruments will always have an 'in exchange' valuation premise. It also states that this must reflect any benefits that market participants would derive from holding that asset in a diversified portfolio.

The application of the new fair value definition to liabilities is explained in the following paragraph.

[49] Example of 'in use valuation premise' if an entity decides that billing software that it owns would have a higher value when valued in conjunction with customer management software (due to synergies gained) – value is higher 'in use' with other assets'

When the corresponding asset is a debt security, and that debt security is traded in an active market, the observed price in that market (adjusted for features that may be specific to the asset and not the liability or vice versa) also represents fair value of the issuer's liability.

If there is no corresponding asset for a liability, present value or other valuation techniques are used to estimate the price that market participants would demand to assume the liability.

Regarding equity instruments the fair value is measured from the perspective of a market participant who holds the instrument as an asset.

14.4.2.2 Valuation techniques proposal

Regarding valuation techniques the ED proposed the following.

If an input is based on bid and ask prices, a price within the bid-ask spread that is most representative of fair value is used. Mid-market pricing or other conventions based on the bid-ask spread may be used to as a practical equivalent for determining fair value.

Blockage factors (an adjustment for the illiquidity of large holdings of financial instruments) are not included in a fair value measure.

Additional guidance is included in the ED addressing how to approach the determination of fair value when there is no active market. In particular, consistent with the guidance issued in the Expert Advisory Panel (EAP) document in 2008, the ED notes that actual transactions that occur in an inactive market cannot be ignored. However, if there is evidence that transactions were not orderly, the ED proposes that little, if any, weight should be given to them.

14.4.2.3 Fair value hierarchy

The ED proposes a fair value hierarchy that prioritizes the inputs used to measure fair value into three levels as summarized in the table below. This same hierarchy is used when approaching both the measurement of, and disclosure about, fair values. Additional guidance is included in the ED to determine whether or not a market is active, consistent with the recently issued guidance in the US.

Fig. 56: Fair value hierarchy - Measurement and Disclosure

Level 1 inputs	Level 2 inputs	Level 3 inputs
Quoted prices (unadjusted) in **active markets** for identical assets or liabilities that the entity can access at the measurement date.	Inputs **other than quoted** prices included in level 1 that are **directly or indirectly observable.**	Inputs that are **not based on observable** market data. The assumptions used must reflect those that market participants would use, including risk.
An active market is defined as one in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis. This is consistent with its respective definition in other IFRSs.	If the asset or liability is for a specified term, the input must be observable for substantially the full term.	

Source: own presentation

14.4.2.4 Disclosures

The ED proposes to incorporate the fair value disclosures adopted in the recent revisions to IFRS 7 *Financial Instruments: Disclosures*, to extend these beyond financial instruments – to all assets, liabilities or equity that are measured at fair value. It also extends this, by requir-

ing disclosure of the fair value hierarchy for assets or liabilities where fair value information is only disclosed, even though the items are not measured at fair value –for example financial instruments carried at amortized cost (this proposal was contained in the ED amending IFRS 7, but was ultimately not included in the final amendments.)

Additional disclosures are also proposed for liabilities measured at fair value after initial recognition, and when the highest and best use of an asset differs to its current use. The ED also proposes amending IAS 34 *Interim Reporting* to require similar disclosures about the fair value of financial instruments in interim financial statements.

14.4.3 Author's assessment of the ED *Fair Value Measurement*

The ED on Fair Value Measurement brings various challenges for its users.

In a first step, the processes and procedures for determining fair value must be reassessed in the light of (i) highest and best use and (ii) determining the most advantageous market.

In a next step, this will unavoidably impact information systems, information flows and the information gathered and archived within entities.

With the proposed enhancements to fair value disclosures required for *year end* 2009, further implementation challenges occur for preparers.

Those entities that already prepared analysis similar to the three-level fair value hierarchy for their financial instruments at fair value must validate the previous disclosures against the amendments. This is as well unavoidably connected to changes in the processes, systems and data in place to identify and disclose:

- Significant transfers between levels 1 and 2, including reasons for the transfers
- For level 3, a reconciliation of all movements, and transfers into and out of Level 3, as well as reasons for the transfers
- Unrealized gains/losses on level 3 instruments
- For level 3 instruments, the effect of reasonably possible alternative assumptions, by class and the way the assumptions were determined.

All these implementation issues must be urgently solved by preparers which is unambiguously a great challenge in practice.

14.5 Financial Instruments: Replacement of IAS 39

14.5.1 Background

The original version of IAS 39 was published by the Board's predecessor body, the International Accounting Standards Committee (IASC) and became effective for financial statements covering financial years beginning on or after 1 January 2001. Until the current *Exposure Draft on Derecognition* the Board had not reconsidered the fundamental approach to accounting for financial instruments.

IASB and the FASB jointly aim at improving and converging financial reporting standards, and reducing complexity of the accounting for financial instruments. Post-crisis the IASB has been requested to attempt to address the issue pro-cyclicality. Therefore a project to replace the current financial instruments standard, consisting of 3 stages: *Classification and*

measurement, Impairment (including loan loss provisioning) and *Hedge accounting* was set up.

Fig. 57: Comprehensive project to replace IAS 39 Timetable

Project stage	Exposure draft	Finalisation
1. Classification and measurement (Board deliberations ongoing)	Issued July 2009	In time for 2009 financial statements (voluntary early adoption)
2. Impairment (Board deliberations ongoing)	Issued November 2009	Full replacement of IAS 39 during 2010
3. Hedge Accounting (Board deliberations not started yet)	Expected December 2009	Full replacement of IAS 39 during 2010

Source: own presentation

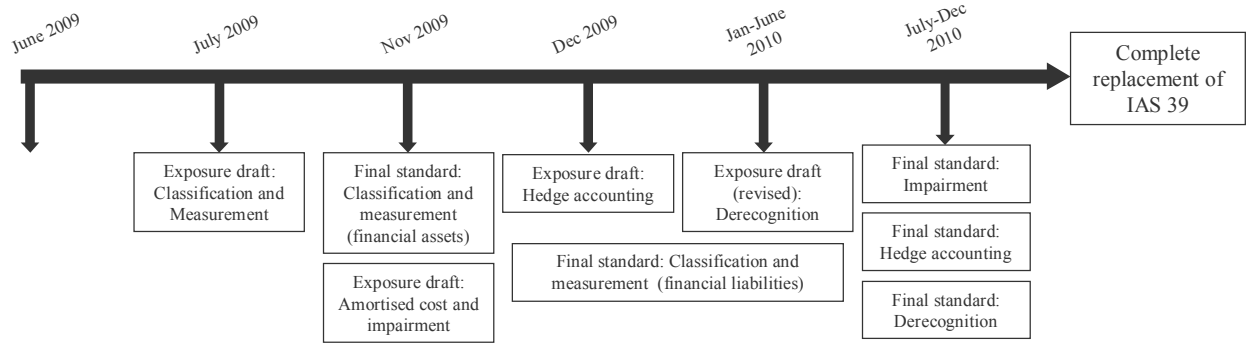
The objective of the project is to improve the decision-usefulness of financial statements for users by simplifying the classification and measurement requirements for financial instruments. The project will ultimately replace IAS 39 *Financial Instruments: Recognition and Measurement*[50].

The IASB aims to have replaced all of the requirements of IAS 39 during 2010.

The proposals answer concerns raised by interested parties during the financial crisis, for example, eliminating the different impairment approaches for available-for-sale assets and assets measured using amortized cost. According to IASB, the quickest way of dealing with such issues is by replacing the base classification and measurement requirements in IAS 39.

The significant changes in accounting for financial instruments for replacing IAS 39 are summarized in the following graphic.

Fig. 58: The significant changes for replacing IAS 39



Source: own presentation

The IASB finalized the classification and measurement proposals for non-mandatory application in 2009 in November 2009.

On 14 July 2009 the IASB published for public comment an exposure draft (ED) on *Financial Instruments: Classification and Measurement* which represented part of phase 1 of the above project and addressed the classification and measurement of financial instruments. The consequences of the classification and measurement proposals are supposed to form a

[50] IAS 39 establishes the principles for recognising and measuring financial assets, financial liabilities and some contracts to buy or sell non-financial items. IAS 39 includes provisions about the classification of financial instruments, their ongoing measurement (including when impairment is required), when financial instruments should be recognized and derecognized and hedge accounting requirements.

basis for making subsequent proposals on the accounting for impairments (phase 2) and hedging (phase 3).

On 12 November 2009 the Final Standard IFRS 9 *Financial Instruments* dealing with *Classification and Measurement* was issued. IFRS 9 *Financial Instruments* completes the first part of the project to replace IAS 39 Financial Instruments: Recognition and Measurement setting the new requirements on the classification and measurement of financial assets.

IFRS 9 uses a simple approach to determine whether a financial asset is measured at amortized cost or fair value. The new approach is based on how an entity manages its financial instruments (its business model) and the contractual cash flow characteristics of the financial assets.

The standard also requires a single impairment method to be used.

As presented in figure 58 above, the requirements for the classification and measurement of financial liabilities are expected to be published in 2010.

On 5 November 2009 IASB published an Exposure Draft ED/2009/12 *Amortized Cost and Impairment*, which is the second part of the IASB three-phase project to replace IAS 39, and a final standard is expected in 2010.

Proposals for the third part of the project, on hedge accounting, continue to be developed.

14.5.2 The main changes

IASB adopted a working premise to proceed with a two measurement category approach that would measure financial instruments at either **fair value**; or **amortized cost**.

Fig. 59: The new measurement categories according to ED/2009/7

Two measurement categories for assets and liabilities	"Basic loan features"	"Managed on a contractual yield basis"
Amortized cost • Basic loan features AND • Managed on contractual yield basis	• Cash flows represent principal and interest; • Return has a close relation to the funding volume (no leverage) and reflects time value of money and credit risk Includes: • Resets of interest rates in response to changes in the credit quality • Caps, floors, collars that combine a fixed and variable interest rate • Prepayment options	• The instruments are managed and their performance evaluated by key management personnel on contractual cash flows basis • Not an instrument-by-instrument approach to classification • Classification is not determined at the reporting entity level[51]
Fair Value Option		
Fair Value • All other instruments • Fair Value Through P/L (FVTPL) • Non-trading equity instruments → elective OCI presentation (FVTOCI)		

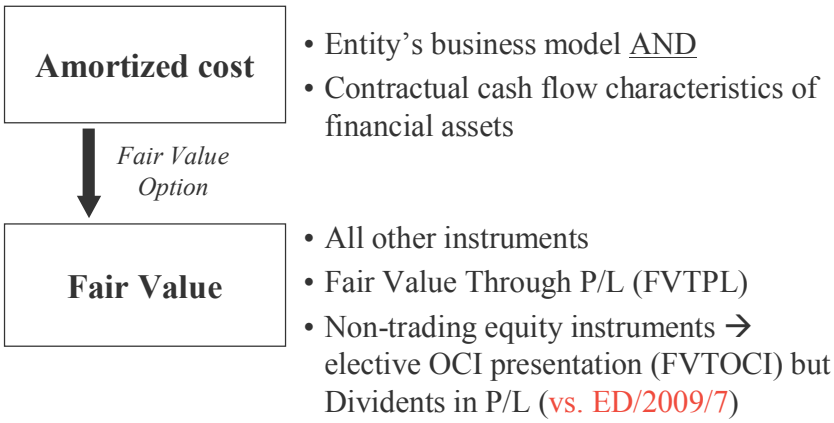
Source: own presentation accounting developments as per End of September 2009

With the new classification and measurement rules almost all financial assets and financial liabilities will be measured at either amortized cost or fair value.

[51] May be business unit level e.g. investment banking vs. retail banking.

However, the new approach set in the **Final Standard IFRS 9** is based on slightly different characteristics as opposed to the last Exposure Draft on *Classification and Measurement* (ED/2009/7), namely the new defined criteria (i) how an entity manages its financial instruments (its business model) and (ii) the contractual cash flow characteristics of the financial assets.

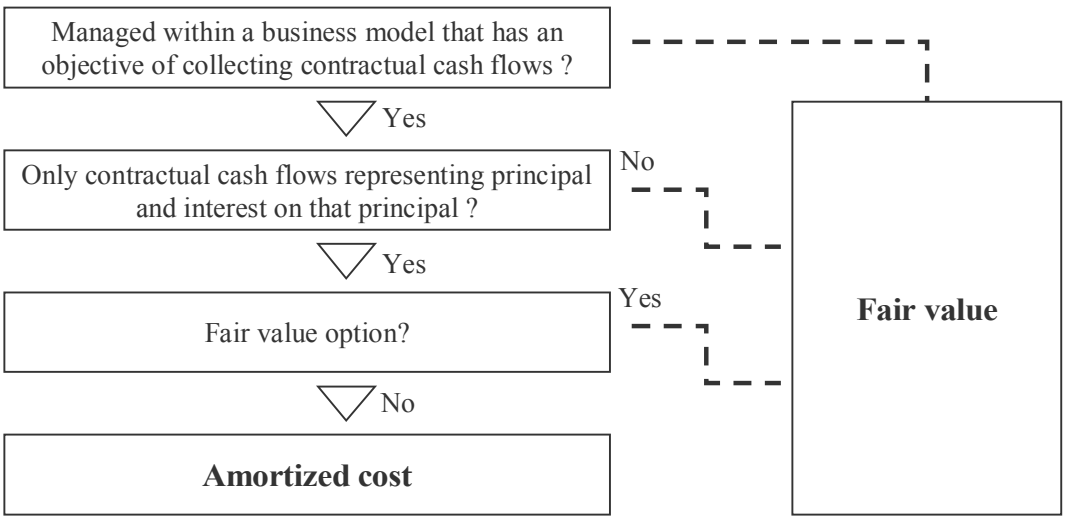
Fig. 60: The new measurement categories according to Final Standard IFRS 9



Source: own presentation update of accounting developments as per End of November 2009

IFRS 9 requires entities to classify financial assets on the basis of the **objective of the entity's business model** for managing the financial assets and the characteristics of the contractual cash flows. Entity's **business model should be considered first**, and the contractual cash flow characteristics should be considered only for financial assets that are eligible to be measured at amortized cost because of the business model. According to IASB both classification conditions are essential to ensure that amortized cost provides useful information[52].

Fig. 61: Summary: process to determine measurement according to IFRS 9



Source: own presentation

As presented in figure 61, IFRS 9 requires (unless the fair value option is elected) financial assets purchased in the secondary market to be measured at amortized cost if the instruments are managed within a business model that has an objective of collecting contractual

[52] Additional application guidance has also been added on how to apply the conditions necessary for amortized cost measurement

cash flows and the financial asset has only contractual cash flows representing principal and interest on that principal even if such assets are acquired at a discount that reflect incurred credit losses.

IFRS 9 requires that when an entity elects to present gains and losses on equity instruments measured at fair value in other comprehensive income, dividends to be recognised in profit or loss. The exposure draft had proposed that those dividends would be recognised in other comprehensive income (see figure 60).

The existing categories of loans and receivables, held-to-maturity investments and available-for-sale financial assets are intended to be eliminated.

IFRS 9:

- Retains the fair value option: i.e. application of fair value measurement for financial instruments that qualify for amortized cost measurement if, for example, fair value better reflects the entity's business purpose for holding the instrument. Thus, fair-value on initial recognition is allowed if the election "eliminates or significantly reduces an accounting mismatch," especially with respect to equity instruments[53].
- Allows reclassifications between the fair value and amortized cost categories when the entity's business model changes (against the tentative decisions according to the ED/2009/7 to prohibit reclassifications).
- Requires a '**look through' approach for investments in contractually linked instruments that effect concentrations of credit risk (securitizations)**. The exposure draft had proposed that only the most senior tranche could have cash flows that represented payments of principal and interest on the principal amount outstanding.
- A hybrid contract (a non-derivative host contract with an embedded derivative) with a host that is a financial asset is not separated. Such contracts are classified in accordance with the classification criteria in their entirety. There is no change to the accounting for hybrid contracts if the host contract is a financial liability or a non-financial item.

Fig. 62: Implications: Application to AFS debt instruments

AFS debt instruments (contractual cash flows) changed to		**AFS debt instruments (embedded derivative features) changed to**	
Current rule	Proposed rule	Current rule	Proposed rule
Contractual cash flows*	**Amortized cost** (subject to impairment)	Hybrid contract (as a whole) based on collecting contractual cash flows	**Whole instrument at amortized cost** (subject to impairment)
No contractual cash flows*	**Fair value through P&L** (no impairment)	All other hybrid contracts with financial hosts	**Whole instrument at fair value through P&L** (no impairment)

* Fair value option available if there is an accounting mismatch

Source: own presentation

- All equity investments must be measured at fair value. To alleviate concerns about the ability to measure some such investments at fair value, the fair value measure-

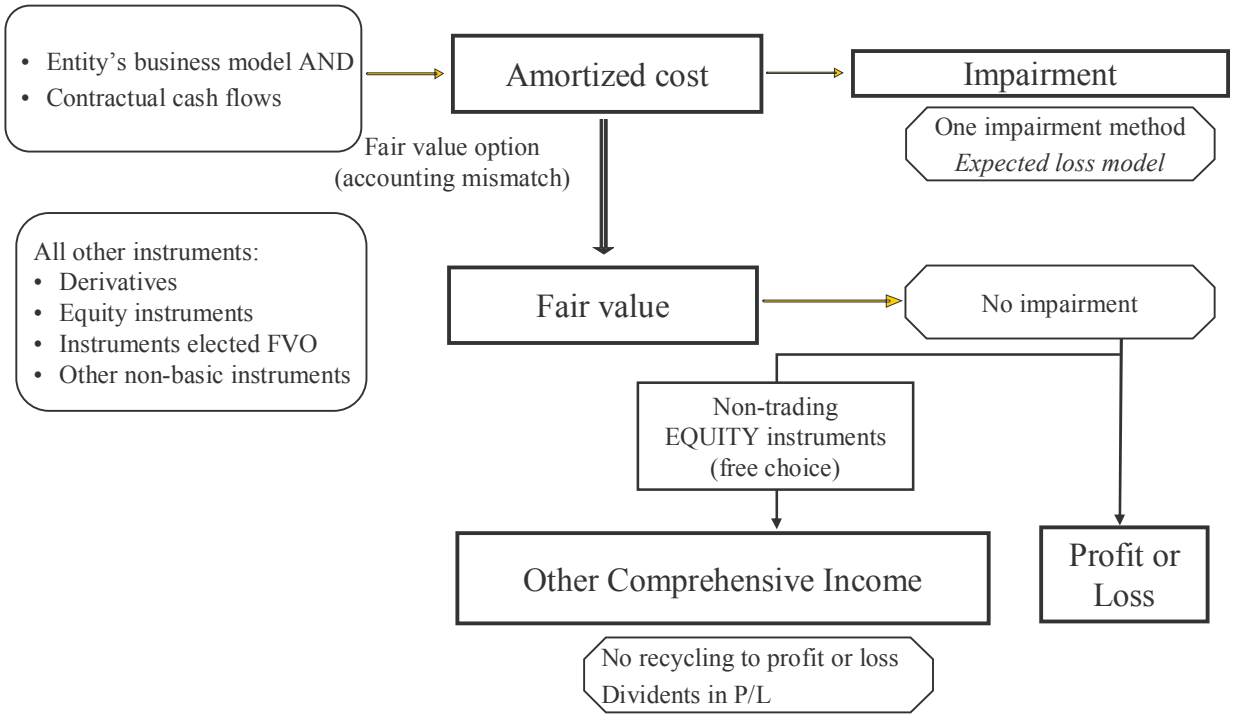
[53] An accounting mismatch can occur when stocks, for example, are measured for distribution at their carrying value and dividend payments are measured at their higher fair value.

ment project promised to provide application guidance to help users under which circumstances the cost of equity instruments might be representative of fair value.

- Allows companies to recognize changes in the fair value of equity investments, on an investment-by-investment basis, in OCI rather than the income statement if the investments are not held for trading. In addition, "recycling" of fair-value gains and losses from OCI to the income statement is not permitted (since recycling the gains and losses would require an impairment test, and that would add complexity to the standard.

As a result of the new classification model, the only financial assets subject to impairment will be instruments measured at amortized cost. All impairments are eligible for reversal.

Fig. 63: Summary of the approach



Source: own presentation

Summarizing the new rules, the IASB's intent was to reduce the complexity inherent in IAS 39. To achieve this goal, IFRS 9 was set up to use a single approach to determine whether a financial asset is measured at amortized cost or fair value, rather than following the many different rules contained in IAS 39.

Before qualifying for the amortized-cost measurement, entity must satisfy both new two main criteria: a company's business model and the contractual cash-flow characteristics of the financial asset.

Specifically, the criterion "holding assets to collect contractual cash flows rather than to sell them before their contractual maturity in order to realize fair value changes" means in practical terms, that in order to avoid fair-value accounting and qualify for the use of amortized cost measurement, entities must prove that they behave more like a “traditional” bank than as a trading unit.

For example, in order to qualify for amortized cost treatment a bank must prove that extending loans is done with the intention of holding the loans and collecting cash flows on them, rather than buying and selling financial instruments in the short term. Instruments such

as equity investments have a wide range of possible cash flow outcomes and do not qualify for amortized-cost measurement.

14.5.3 Transition

Entities are not required to apply the new IFRS for financial instruments until 2013. However, early adoption is permitted.

Transition relief for entities that choose to adopt the new requirements early, is provided, including relief from having to restate comparative information if an entity adopts the new requirements for financial periods beginning before 1 January 2012 as originally proposed in the ED.

Entities that adopt early the requirements for the classification and measurement of financial assets are not bound also to adopt early the guidance in the later phases. However, entities that want to adopt early any of the later phases are required to adopt at the same time the requirements of any earlier phases.

Additional disclosures are required by all entities when they adopt the new guidance, to explain the effects of adoption on the entity's financial statements.

14.5.4 Author's assessment of selected changes from Classification and Measurement

14.5.4.1 Securitizations

Background according to ED/2009/7 and critical assessment

For investments in securitization notes, the IASB's proposal (ED/2009/7) only allowed the most senior tranche to be measured at amortized cost and required others to be measured at fair value through profit or loss.

In certain securitization structures, tranches under the most senior may receive more credit protection than they provide and in this way possess less variable cash flows than the underlying reference assets and so, in substance, may represent better characteristics to be accounted for at amortized cost than the underlying assets.

In many securitization structures the most senior tranches are generally credit derivatives, and according to the original proposal in such a case, no tranche would be recorded at amortized cost.

An interesting and surely not intended arbitrage opportunity was also provides by the ED for the case that an originator decides to put assets with non contractual cash flows (for instance, equities) into a SPV, issue several tranches of debt, and record the most senior tranche at amortized cost.

In addition, if less senior tranches (notes) were subject to resecuritization in order to create new senior tranches, the original proposal (ED) would be easily misapplied because nothing says that the proposed rules only apply to notes issued by entities that actually hold the underlying reference assets.

Summarizing the author's critical assessment from the previous lines, the originally proposed approach in the ED was surely thought to minimize complexity in securitization accounting but was also leading to potential misapplication and arbitrage opportunities derived from the proposed rules themselves.

In fact, the complexity in accounting for securitization techniques is unavoidable for a principle-based approach to complex instruments such as securitization structures.

Securitization accounting according to the Final Standard IFRS 9

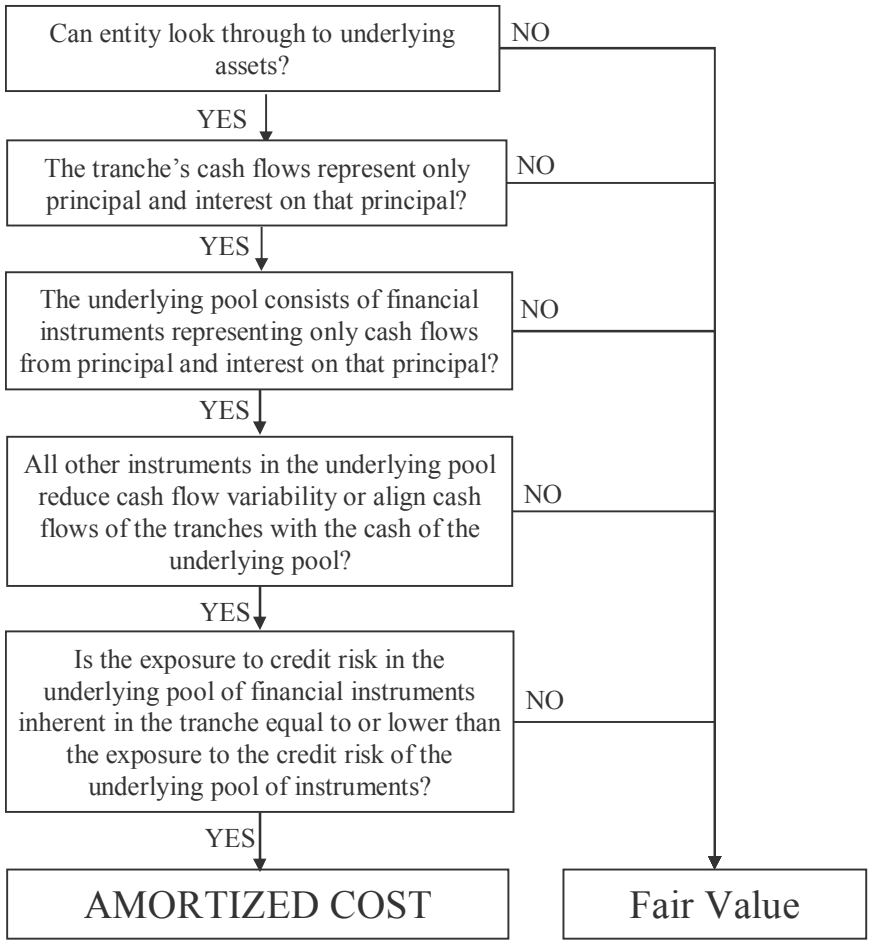
Many respondents disagreed with the above presented proposal to only allow amortized cost measurement for the most senior tranche and to require the subordinated tranches to be measured at fair value through profit because it was an exception to the overall classification approach, focusing on the form and legal structure of the arrangement.

Respondents pointed out that in fact economically similar instruments would be accounted for in different ways. In addition, the proposal was considered not effective because it would be easy to structure an instrument to achieve a particular accounting outcome.

IASB agreed with those comments and amended the requirements in the IFRS.

IASB concluded that holders of investments in such tranches should look through to the underlying pool of instruments to identify the assets generating the cash flows. Any tranches that are not more leveraged than the underlying pool (not just the most senior tranche) will be eligible for amortized cost measurement provided the underlying instruments meet the conditions set out in the standard. Thus, the holder of securitization notes should look through the structure down to the underlying pool of instruments that are creating the cash flows. To qualify for measurement at amortised cost, the check as presented below must be applied. If an entity cannot make this assessment it must measure the tranche at fair value.

Fig. 64: Application of IFRS 9 to securitizations



Source: own presentation

14.5.4.2 Practical implications of IFRS 9

One can assess the following consequences of the intended changes referring to *Classification and Measurement* as advantages:

Through the future existence of only two categories for financial instruments the complexity faced by user could be eliminated at the same time improving the understandability of financial statements and their application. However, it is currently only a hypothetical advantage, e.g. the practical implementation can teach users the opposite.

Some further theoretical benefits from the changed rule are:

- Eliminating the complex rules on embedded derivatives
- Reduced impairment charge for debt securities if the instrument qualifies for measuring at amortized cost
- Hedge accounting possible for securities held at amortized cost, not previously permitted if 'held to maturity'
- Can reverse fair value losses on some equity instruments through profit or loss as equity markets recover

One can assess the following consequences of the intended changes referring to *Classification and Measurement* as disadvantages:

- Early adopters will not know the final changes to be made during impairment and hedge accounting (Phases II and III of the IAS 39 replacement project of IASB)
- All equity instruments will be at FVTPL → additional volatility (unless designated as FVTOCI on initial recognition)
- Structured investment vehicles → all tranches according to the current proposal will be accounted for at FVTPL except most senior tranche
- Many securitization tranches reclassified from FV to amortized cost using the October 2008 amendment may need to be reclassified back to FV
- Liabilities currently containing embedded derivatives should be measured at fair value in their entirety, including changes due to own credit risk
- Once a classification is set, no reclassifications are permitted.

14.6 Impairment of financial assets

14.6.1 Overview of the proposed changes

As part of phase 2, the IASB is drafting how the impairment of financial assets should be based on an expected cash flow (ECF) approach, rather than the incurred loss approach as is currently required.

The table below summarizes the main features of the incurred loss model currently used by IAS 39 and the new proposed expected loss model.

The main difference between the two approaches is that under the incurred loss approach, an impairment loss is only recognized when a loss event has occurred. Losses that are expected to arise from future events are not recognized. The concept of a 'loss event' is not evident in the expected loss model. An expected cash flow impairment approach recognizes impairment losses which are expected to occur over the life of the asset.

Fig. 65: Current incurred loss vs. proposed expected loss approach

Incurred loss	Expected loss
Interest revenue recognized on the basis of **contractual cash flows** (future credit losses must be excluded).	Interest revenue recognized on the basis of **expected cash flows** including expected losses.
Interest revenue **overstated** in periods before a loss event occurs.	Interest revenue **reflects the total net return expected at inception.**
Impairment recognized only when **loss event** occurs (impairment triggers).	Impairment recognized from an **adverse change** in loss expectations (no impairment trigger: **continuous re-estimation**).
Complex interplay between individual and collective impairment	Individual or collective assessment only **depends** on what better facilitates the cash flow estimate.
Reversals of previous impairment losses up to **amortized cost**.	Reversals of impairment up to the **full contractual cash flows discounted** at the original EIR (potentially above par value).

Source: own presentation

In order to promote the discussion of expected cash flow impairment approach the IASB has developed some numerical examples that illustrate the specific challenges arising when applying the ECF approach to variable rate financial assets. According to IASB, the cause of the complexity regarding variable rate instruments is the interaction between changing interest rates and two different reference bases:

- for accounting purposes the effective interest method uses the carrying amount outstanding from time to time as the reference basis for applying the effective interest rate (EIR); and
- for contractual purposes the nominal amount is the reference basis for applying the contractual interest rate.

14.6.2 Author's assessment of the proposed changes on Impairment (expected loss model)

14.6.2.1 Challenges to be faced by users

The main challenge in transitioning from an incurred loss approach to an expected cash flow (ECF) approach will be to

- obtain the expected cash flow data and
- apply the new, highly complex effective interest rate calculation.

A further issue is the necessary review of the current loan portfolios in order to newly determine appropriate groupings based on similar characteristics, initial recognition and maturity, repayment terms, etc. The appropriate processes across the identified portfolios should be newly assessed and in many cases newly designed in order to manage effective interest rate and catch up adjustments. Users (credit institutions and other entities) will need to determine how best to group loans (based on similar characteristics, initial recognition and maturity, repayment terms, etc.) to calculate the expected cash flows and periodically backtest their assumptions. In practice quantitative resources have to be found and appropriate expected loss models including backtesting procedures and methods have to be developed and implemented.

Another issue for users is to understand the practical impact on existing systems and processes and built-in controls within the current process. Developing of detailed procedures and controls covering risk management, accounting, and systems impacted by the methodology change is unambiguously necessary so that the new IASB requirements can be met and operationally practiced. The current data and calculation systems with accounting relevance must be largely enhanced in order to calculate expected loss and implement a new effective interest rate calculation.

The expected cash flow impairment approach proposed by the IASB differs from the approach under Basel II. Even sophisticated banks using the Advanced Internal Ratings Based approach under Basel II for their calculations of expected loss for regulatory purposes only have default data with the time horizon of one year, whereas under IFRS they will need to look forward over the whole life of the financial instruments, e.g. each year to maturity. Backtesting procedures under IFRS will also differ from these under Basel II because of the longer time horizon and the different data inputs into the expected loss calculations.

Whilst institutions may have expertise within the business to price expected loss into products, even the most sophisticated banks do not have systems to collect the data and process it appropriately for accounting purposes.

According to constituents' feedback so far the expected total cost of implementing all of the amendments to the financial instruments standard will be more than the cost of IFRS conversions. The implementation time for the expected loss model is expected to be 2-3 years for most sophisticated institutions, which means that less sophisticated user might need longer.

Resuming the above analysis, entities will face difficulties arising from the following:

- Difficulty in obtaining the expected cash flow data (NOT the same data as in Basel II models)
- Massive changes to processes, information systems and controls (Some banks that currently calculate expected credit losses for regulatory purposes according to Basel II may already have much of the information available)
- Professional judgment in assessing expected future credit losses (Both the incurred and expected cash flow impairment approaches make use of discounted cash flows but more judgment is needed in assessing expected future credit losses)
- Analysis required to newly group loans (by maturity, repayment schemes, etc), to calculate the expected cash flows and to perform backtesting
- Reconcile the assessment of expected losses on a portfolio basis and credit losses incurred on specific assets within the portfolio
- Significant impact on methodology and lack of transparency of expected loss model
- Extremely complex EIR calculations for variable rate products
- Current calculations circulated by the IASB use forward rates

By means of the request for information IASB asked users if the approach is clearly defined and if it is operational. According to the previous section and having in mind the enormous need to adapt systems, processes and methods for calculating the expected loss to account for impairment the newly proposed approach does not seem to be operational.

Since the implementation and maintenance costs are expected to be extremely high, the practicability of the model is at best questionable.

Some further considerations arise from the issue that the proposed model does not solve certain issues

- Pro-cyclicality is being addressed in the wrong way since the proposed model can actually be more pro-cyclical
- The attempt to simplify accounting standards fails at the point of implementation of the EIR calculation since it is complex.

This issue is also addressed by alternative approaches currently under consideration, such as

- the FBE proposal an accounting provision which refers to a collective provision based on percentage of outstanding loans.

The European Banking Federation (FBE) is considering an alternative model to impairment similar to the Spanish dynamic provisioning model. The FBE favours an accounting provision, not regulatory provision where the collective provision should be based on a percentage applied to outstanding loans over the life of the loans rather than using the complex EIR method, thus resulting in the recognition of day 1 losses on new loans.

- EC proposes a regulatory provision – built up during economic upturns and released during downturns so institutions can lend

The European Commission (EC) has proposed a regulatory provision based on data provided by the central bank. The regulatory provision should be built in good times and cannot be used to grant new loans, however, in bad times, entities will begin to record losses and this regulatory provision can be released to grant new loans. Thus, entities will not need to raise capital urgently in the case of a financial crisis. In addition, this additional regulatory provision will not be a problem for stakeholders if it does not have an accounting impact.

14.6.2.2 Constituents' responses

Based on the information from a Roundtable on the constituents' perception of the proposed changes to impairment I summarize in the following section the industry responses to the proposed expected loss model.

Generally, most respondents requested additional guidance and clarifications. The majority believed the approach represents significant challenges in terms of application and implementation, whilst others felt it was impossible to apply.

Most respondents estimated significant implementation costs averaging 25% to 75% of initial IFRS adoption costs and considerable lead time averaging 2 to 3 years.

A general requirement was to maximise the use of Basel II parameters, for example to make use of portfolio based estimates for probability of default (PD) and loss given default (LGD).

A further concern is to simplify the effective interest rate (EIR) calculation by separating the calculation of losses and interests and to use adequacy test for expected losses included in the EIR.

Referring to variable rate instruments either no views or conflicting views on the application were presented. Some suggested other alternatives or even the entity's choice that meet the measurement objective. Further on, mixed and conflicting views on the treatment of impaired assets based on collective versus individual assessment were expressed. Most supported principles-based guidance which ensures best estimate and no double counting was required.

14.7 Derecognition

Regarding *Derecognition* it got clear during and after the crisis that some entities did not account for assets they still control. Since this deteriorates the financial presentation for users, in March 2009 the IASB published an exposure draft Derecognition ED/2009/3 comprising proposed amendments to IAS 39 and IFRS 7. It is meant to review and clarify when entities should stop accounting for assets transferred to other entities and reviews the disclosure requirements.

14.7.1 Background

The International Accounting Standards Board (IASB) has published an exposure draft (ED) to improve and simplify the requirements as to when financial assets and liabilities are derecognized. The ED proposes a new derecognition model for financial instruments to replace the existing provisions of IAS 39 Financial Instruments: Recognition and Measurement and introduce new disclosure requirements in IFRS 7 Financial Instruments: Disclosures.

The definition of derecognition in IAS 39.9 is: "*Derecognition of a financial asset or liability is ceasing to recognize that asset or liability in an entity's statement of financial position*."

The ED proposes to amend IAS 39 and IFRS 7. The primary changes relate to the derecognition of financial assets. The proposed amendments also would revise the approach to derecognition of financial liabilities in IAS 39 to be more consistent with the definition of a liability in the IASB Framework.

The reasons for the revision of the current derecognition requirements in IAS 39 is that the latter were perceived to be difficult to understand and apply in practice.

The proposed amendments to IFRS 7 Financial Instruments: *Disclosures* would enhance the disclosures in that IFRS to improve the evaluation of risk exposures and performance in respect of an entity's transferred financial assets.

14.7.2 Derecognition – financial assets (proposed approach)

The Board was divided on the appropriate approach to derecognition of financial assets. Two approaches for derecognition of financial assets were therefore proposed. A majority of the Board favoured (and decided on) the proposed approach. However, a minority of Board members preferred an alternative approach.

Like the proposed approach, the alternative approach bases the decision of whether an entity should derecognize a transferred financial asset on whether the entity has surrendered control of the asset. However, unlike the proposed approach, the alternative approach **assesses control differently**, and with that, has a **different perspective of what the asset** that is the subject of the transfer is.

It is proposed that derecognition is assessed at the level of the reporting entity. Consequently, as with the current requirements of IAS 39, any SPEs will first need to be consolidated before the derecognition rules are applied.

As is currently the case, the asset (or group of assets) eligible for derecognition is either: the financial asset in its entirety; specifically identified cash flows; or a fully proportionate share of the cash flows from that financial asset (or that group of financial assets), for example 80 per cent of all the cash flows of an asset. When the cash flows are not proportional, for

example the first 80 per cent of cash flows of an asset (that is a senior to the remaining 20 per cent), the entire asset is assessed for derecognition.

When a financial instrument can be both an asset and a liability over its life (e.g., a derivative such as a swap), the asset transferred is considered to be the entire instrument.

A transfer of the rights to all the cash flows or other economic benefits of a financial asset is akin to transferring the financial asset itself. The ED explains that it is not necessary to transfer the underlying contract, just the rights to all the cash flows of the asset.

The ED proposes that an entity can derecognize an asset if:

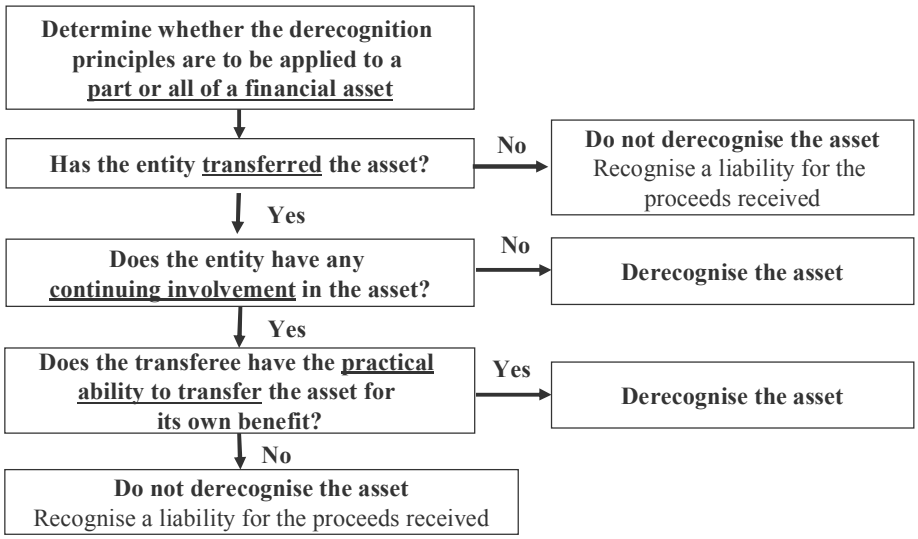
- the contractual rights to the cash flows from the asset expire; or
- the entity transfers the asset and has no continuing involvement in it; or
- the entity transfers the asset and retains a continuing involvement in it but the transferee has the practical ability to transfer the asset for its own benefit.

Where the contractual rights to the cash flows of the asset expire, such as when a receivable is paid in full, the asset is derecognized.

Whenever there is continuing involvement in the asset, an assessment must be made to determine if the transferee has the practical ability to transfer the asset for its own benefit. A transferee has the practical ability to transfer if it can immediately transfer the asset for its own benefit to an unrelated third party, unilaterally, and without having to impose additional restrictions on that transfer. Judgment will be needed to determine whether the transferee has this ability. The ED provides the following factors to be considered when making this assessment:

- The terms of the transfer arrangement (including other contracts or arrangements entered into in relation to the transfer)
- The nature of and market for the asset (fungibility and obtainability)
- The transferee's ability to obtain the full economic benefits of the asset
- Any other economic constraints

Fig. 66: Derecognition – Financial Assets (Proposed Approach)



Own presentation

If a transfer does not qualify for derecognition as a result of failing the practical ability to transfer test, it is only reassessed for derecognition when conditions change so as to give the transferee that ability. Furthermore, once an asset is derecognized, a transferor would not be required to recognize an asset which was previously derecognized, as a result of the transferee no longer having that practical ability.

The ED uses the term 'transfer' broadly to include all forms of sale, assignment, provision of collateral, sacrifice of benefits, distribution and other exchange, hence, there is no need to satisfy the current IAS 39 'pass through' test. However, a transfer does not necessarily result in derecognition. A transfer takes place when one party passes, or agrees to pass, to another party some or all of the economic benefits underlying one or more of its assets. The term 'transfer' includes: all forms of sale, assignment, provision of collateral, sacrifice of benefits, distribution and other exchange. Hence no need for "pass-through" test does not necessarily result in derecognition.

Continuing involvement in the asset exists if the entity retains the contractual rights and obligations of the asset or obtains new contractual rights and obligations in the asset. The ED states that normal representations and warranties (relating to fraudulent transfer and concepts of reasonableness, good faith and fair dealings etc.), retention of rights to service the asset (in a fiduciary or agency relationship), and contracts associated with reacquiring the asset at fair value (e.g., forward, option and other contracts) are not considered to be continuing involvement. Thus, continuing involvement in the asset means the assumption of new or retention of contractual rights and obligations with exceptions for e.g. normal representations and warranties (reasonableness, good faith, fair dealings, etc.) or retention of rights to service the asset (in a fiduciary or agency relationship) provided.

Fig. 67: Examples

1. Transfer asset and enter into:	**Proposed Approach**	**Existing IFRS**
Physically settled forward repurchase contract • Asset readily obtainable • Asset not readily obtainable	 Derecognition No derecognition	 No derecognition No derecognition
Physically settled purchased call option • Asset readily obtainable • Asset not readily obtainable	 Derecognition No derecognition	 Derecognition Continuing involvement
Physically settled written put option • Asset readily obtainable • Asset not readily obtainable	 Derecognition No derecognition	 Derecognition Continuing involvement
2. Transfer asset and enter into net settled Total Return Swap	Derecognize, as transferee has practical ability to transfer, unless (e.g.) the transferor retains a security interest in the asset	Do not derecognize
3. Transfer of first 80% interest in portfolio of assets	No derecognition, as transferee does not have the practical ability to transfer	Probably do not derecognize
4. Transfer of first 99% interest in portfolio of assets	No derecognition	Continuing involvement
5. Transfer to securitization structure, continue to service (only removed if breach of obligations) and fund a reserve fund	No derecognition, as transferee has no practical ability to transfer	Probably no derecognition

Source: own presentation

14.7.3 Derecognition – financial assets (alternative approach)

Under the alternative approach, when the rights to any identified cash flows are transferred, the transferor

- derecognizes the previously recognized asset and
- recognizes new assets and liabilities, at fair value, for the rights and obligations either retained or obtained in the transfer transaction.

As individual cash flows are eligible for derecognition, this approach is less restrictive than the preferred approach and will often result in more financial assets being derecognized.

14.7.4 Derecognition – financial liabilities

The ED proposes that a financial liability is derecognized when it no longer qualifies as a liability of the entity, that is when the present obligation is eliminated and a transfer of economic resources in respect of that obligation is no longer required. This is consistent with the general definition of a liability and similar to the current IAS 39, e.g., the 10 per cent rule that is used to determine if the original and renegotiated terms of a debt instrument are substantially different, has been retained.

14.7.5 Derecognition disclosure

The ED proposes that, when an entity derecognizes financial assets, but has continuing involvement in them, it shall **disclose** information that enables users of its financial statements to evaluate the nature of, and risks associated with, the entity's continuing involvement in those instruments.

Further on, the ED proposes that, when a transfer of financial assets does not qualify for derecognition, the entity shall disclose information that enables users of its financial statements to understand the relationship between those assets and their associated liabilities after the transfer.

14.7.6 Author's assessment of the derecognition potential impact

The business impact of the ED on derecognition is:

- Increased derecognition of readily obtainable assets

The most significant effect of the proposals seems to be on the balance sheets of banking institutions regarding repurchase agreements and stock lending transactions (of instruments that are readily obtainable in the market) which will be accounted for as sales plus a derivative (i.e., the assets would be derecognized), rather than as secured loans. This would result in a major reduction in the gross balance sheet size for "matched books" of repos and reverse repos on the same assets. Hence more risks will be 'off balance sheet'.

- The balance sheet will not reflect the risk an entity is exposed to

Application of the proposed approach would mean that what is on balance sheet will reflect the assets the entity controls.

The value added of the proposed model is ambiguous: the model would either derecognize the entire asset or not derecognize the asset at all. It is arguable whether this will provide the transparency that the users expect because it further divorces the idea that the amounts pre-

sented in a balance sheet reflect the risks an entity is exposed to. This is because even relatively insignificant continuing involvement may result in that asset continuing to be recognized despite the risk involved in that continuing involvement being very small.

- Collateral given or received

The proposed model would require securities given or received as collateral to be accounted for as sold or purchased, if the transferee has the practical ability to transfer the asset for its own benefit.

- Continuing involvement

Under the proposed approach most securitizations would result in no derecognition as the transferee would not have the practical ability to transfer the asset, due to the transferor's continuing involvement in the asset (e.g., subordinated interest, guarantee), if the continuing involvement is sufficiently valuable to the transferee.

In contrast, the alternative approach would allow more derecognition than the proposed approach as identified cash flows may be derecognized. Therefore, transfers of assets in securitization would be eligible for derecognition. The retained interests in these transactions would be treated as new assets acquired.

- Disclosure

The detailed quantitative and qualitative disclosures required by the amendments will, in many cases, require entities to modify management information systems and internal controls. The amendments require entities to disclose the contractual cash flows that may be required to repurchase derecognized financial assets, most entities may not currently capture information in the detail necessary to prepare these disclosures.

14.8 Disclosure according to IFRS 7

Post crisis it became obvious that users of financial statements need further information on how entities estimated the fair value of their financial instruments especially in the cases when only limited market data is available to support those estimates. Further on, it became obvious that the current disclosure requirements for liquidity risk were not adequate.

After publishing an exposure draft dated 15 October 2008, in March 2009 the IASB published enhancements to the existing disclosure standard aiming at improving disclosures about fair value measurements of financial instruments and about liquidity risk.

In the case of fair value measurement, some of the ED's drafting has been made clearer, one requirement has been dropped and some useful clarification has been provided to the basis for conclusions. However, for liquidity risk, there are some significant differences compared to the amendments proposed by the ED and the amended wording is not all together clear.

14.8.1 Fair value disclosures

For Fair Value disclosures the following hierarchy, by class, for financial instruments recorded at fair value, was proposed:

- Quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1)
- Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (as prices) or indirectly (derived from prices) (Level 2)

- Inputs for the asset or liability that are not based on observable market data (unobservable inputs) (Level 3).

Instrument should be classified in its entirety based on basis of lowest level that is significant to fair value. The disclosure hierarchy does not change measurement hierarchy under IAS 39. The hierarchy is the same under US GAAP FAS 157. 'Class' is one level lower than a category such as 'held for trading'

The required disclosures of movements within the fair value hierarchy, by class:

- Significant transfers between Levels 1 and 2, including reasons for the transfers
- For level 3, a reconciliation of beginning and ending balances with:
    - Total gains or losses for the period split between P&L and OCI
    - Gains and losses in OCI
    - Purchases, sales, issues and settlements (separately by each type of movement, not net)
    - Transfers into and out of Level 3, with 'significant' transfers in/out disclosed separately, along with reasons for the transfers

Currently, IFRS 7 requires disclosure of the sensitivity of level 3 instruments to reasonably possible changes in assumptions which would significantly change their fair value. The amendments require this disclosure to be provided by class of instrument and to explain how the effect of a change in these assumptions was calculated. The amendments explain that 'significantly' should be judged with respect to profit or loss, and total assets and liabilities, or, when changes in fair value are recorded in comprehensive income, total equity.

This means that the reasonably possible alternative inputs of Level 3, by class, are:

- Disclosure of **the impact** of changing one or more inputs to reasonably possible alternative assumptions, if they would change fair value significantly
    - Significance should be based on the entity's profit/loss and total assets or liabilities
- Disclosure of **how** the effect of reasonably possible alternative assumptions was determined

14.8.2 Liquidity disclosures

The required liquidity disclosures are:

- Undiscounted, contractual maturities for non-derivative financial liabilities (including financial guarantees)
- For derivatives, contractual maturities required only when essential for understanding the timing of cash flows
- Otherwise, include in disclosures based on information provided to key management (existing IFRS 7.34(a)), plus how determined, also disclosing if outflows could occur earlier or for different amounts
- Disclosure of maturity analysis of financial assets held for managing liquidity, if necessary to evaluate an entity's nature and extent of liquidity risk

Contractual maturities must be disclosed in earliest period required to be paid or called for:

- When counterparty has a choice of when paid e.g. demand deposits,
- Issued financial guarantee contracts for the maximum amount guaranteed

Disclosures on derivative financial liabilities:

- Contractual maturities if essential for an understanding of the timing of cash flows:
  - Interest rate swaps in a cash flow hedge
  - All loan commitments
- Undiscounted
- Disclose net amounts if settled net e.g. pay floating/ receive fixed interest rate swaps
- Gross is gross cash flow exchanged e.g. currency swaps

Disclosures on how an entity manages liquidity risk under the consideration of disclosing factors such as:

- Committed borrowing facilities
- Deposits with central banks
- Concentrations of liquidity risk in assets or funding sources
- Internal control processes and contingency plans for managing liquidity risk
- Instruments with accelerated repayment terms
- Instruments requiring posting of collateral
- Instruments where mode of settlement is at the entity's choice (cash, another financial asset, own shares etc)
- Instruments subject to master netting agreements

14.8.3 Author's assessment of IFRS 7 proposed changes

The detailed quantitative and qualitative disclosures required by the amendments will in many cases require entities to modify management information systems and internal controls. Most entities with trading activities do not currently capture details of purchases and sales of financial instruments, transfers between categories, or unrealised profits.

Management will need to carefully assess the significance of inputs to its fair value measurement models, considering factors specific to the asset or liability. How an entity determines 'significance' will be judgemental and given the references to profit or loss, may require disclosure of relatively small amounts.

Some large banks have already embraced the three-level hierarchy for fair value disclosures. However, it is possible that the hierarchy used hitherto may not conform to the requirements of the amended standard.

The IFRS 7 changes are effective for annual periods commencing 1 January 2009.

15 Conclusions

Securitization was a critical part of the economy. The crisis did not arise due to securitization's techniques or methodology but because of its misuse.

The financial industry in fact tested the implementation of the rule "anything can be securitized." The financial crisis was the natural consequence of that test.

Numerous issues within the securitization process went wrong. Rating agencies were too heavily relied upon. All assets were treated the same without accounting for differences in companies, security structure, sector exposures etc.

Risk management and control infrastructure lagged behind the introduction and growth of financial innovation.

Same holds for financial regulation.

In fact securitization brought a magnitude of agency problems. Securitization techniques in fact ruined financial markets instead of improving capital market rigor and discipline.

Securitization markets as they have been operating until today, brought a negative net macroeconomic effect and largely damaged to the global economy.

In my dissertation work I identified various shortcomings within the securitization chain. I delivered structural explanations and complex causal interdependencies of the fact why the financial turmoil was inevitable and was to be expected.

I provided numerous explanations and examples that early warning indicators of systemic risk in the financial sector and signs of the coming turmoil were irresponsibly ignored at the time they were perceived.

In fact, standard measures of bank risk commonly used by regulators, such as the risk-weighted assets and capital ratios, failed to capture the systemic risk created and spread by credit risk transfer activities. Due to the diversification presumably achieved by securitization techniques, banks really lowered their capital requirements on an individual bank level. This allowed them to unhealthy extend lending and to largely contribute to the recent turmoil.

The question why financial engineers and managers created these degenerative financial products remains. One plausible explanation starts from an individual manager using securitization to maximize his wealth. The practiced transfer of long-term assets from the balance sheet to external investors allowed raising almost risk free profits at the time of issue which weakened long term incentives.

My merits in this dissertation work root in the multi-facet analysis of securitization techniques that I provide. Up to date a comparable analysis of securitization techniques which addresses the wide spectrum of aspects of securitizations such as (i) their treatment and the related attendant flaws within the regulatory framework Basel II, (ii) the various microeconomic deficiencies related to securitizations, and (iii) the implicit macroeconomic threads of exporting credit risk and de-balancing financial stability through securitization techniques has not been provided in the comprehensive way I built up my analysis.

As a basis for my analysis, I provided a new classification of the characteristics of securitization techniques which were pre-crisis wrongly perceived as benefits.

I proved that some internationally acknowledged institutions largely contributed to the turmoil via spreading wrong opinions, perception and reasoning regarding the potential bene-

fits of securitization techniques and related credit risk transfer products among analysts, market participants and academics.

I strongly criticize the current regulatory treatment and point out at regulatory failures which became obvious at latest with the recent financial crisis.

I presented in detail why the recent financial crisis should be viewed as a clear regulatory failure.

I analyzed the reasons for the turmoil in the financial markets and considered securitization techniques as a key driver for the financial crisis.

Through providing partial solutions and professional author's assessment of some selected regulatory and accounting changes to securitizations I delivered a further experts' contribution to the topic.

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