BASEL II AND SOLVENCY II

IMPACT ANALYSIS OF TWO SUPERVISION MODELS ON FINANCIAL INSTITUTIONS

MASTER PROGRAM “ACCOUNTING AND FINANCE”
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Eléonore Leurent, Tobias Voigt
Umeå, 22nd of May 2007
ABSTRACT

Financial crises, liberalization of financial markets, globalization and more and more sophisticated financial products necessitate appropriate regulations within the financial industry. Nowadays, ever-growing international trading is all the more linked to financial institutions such as banks and insurance companies. But simultaneously, with the international operations, the range of relevant risks has increased enormously and the implementation of new efficient regulations has become necessary. These regulations aim at improving risk management, in order to assure the solvability of these companies and therewith the financial stability of the whole economy. This should be achieved by the supervision models: BASEL II for banks and SOLVENCY II for insurances.

How far do these two supervision models influence the financial institutions and to what extent do they achieve to realize a more adequate risk management? These issues are to be discussed in our thesis.

The relevant risks for industries become conceptualized and both supervision models are presented. The presentation covers a development, objectives and a constitution of both models. Based on this, an analytical review of the models is performed to derive potential impacts and consequences for implementing companies and the financial sector, respectively.

A comparison of the respective objectives, developments, constitutions and impacts of BASEL II and SOLVENCY II provides an insight into potential future consequences of both models on financial institutions. The impacts of BASEL II will further be used to anticipate a few SOLVENCY II developments.

Concluding, it can be stated that both BASEL II and SOLVENCY II are able to handle the new complex risk environment with interconnections and overlappings of risks, if implemented internationally. However, this will be achieved only due to more complex, expensive, and time consuming risk valuation approaches. However, this will also more adequately take into account the individual risk situation of the companies. Therefore, the Minimum Capital Requirements for both banks and insurances are most likely to decrease. Both supervision models are also in line with the developments of IAS/IFRS.

A final consideration of impacts and developments provides a few recommendations and suggestions for regulators, banks and insurances.
# Table of Contents

Table of Figures .......................................................................................................................... VII
Table of Tables ............................................................................................................................. VII
Table of Abbreviations .................................................................................................................... VIII

1 Introduction ................................................................................................................................. 1
   1.1 Problem Background .............................................................................................................. 1
   1.2 Problem Statement and Research Questions ......................................................................... 3
   1.3 Research Objectives ............................................................................................................. 3
   1.4 Research Approach ............................................................................................................... 4
   1.5 Research Method ................................................................................................................. 4
   1.6 Addressee of this Thesis ...................................................................................................... 5
   1.7 Delimitations ....................................................................................................................... 6
   1.8 Outline of the Thesis .......................................................................................................... 6

2 Risks for the Banking and the Insurance Industry ....................................................................... 7
   2.1 Basics of Risk ...................................................................................................................... 7
   2.2 Risks of the Banking Industry ............................................................................................ 7
      2.2.1 Credit Risk .................................................................................................................... 7
      2.2.2 Market Risk ................................................................................................................. 8
      2.2.3 Operational Risk ....................................................................................................... 9
   2.3 Risks of the Insurance Industry .......................................................................................... 9
      2.3.1 Underwriting Risk ...................................................................................................... 10
      2.3.2 Investment Risk ....................................................................................................... 11
      2.3.3 Operational Risk ....................................................................................................... 11
   2.4 Risks are Globally Interconnected (Chapter Summary) ....................................................... 11

3 Basel II – The New Equity Agreements of Basel ........................................................................ 13
   3.1 The Basel Committee for Banking Supervision (BCBS) ....................................................... 13
   3.2 Reasons for New Rules of Equity ....................................................................................... 14
   3.3 Basel I – The First Step ..................................................................................................... 15
   3.4 Basel II – The Development ............................................................................................. 16
   3.5 The Constitution of Basel II ............................................................................................. 17
      3.5.1 The First Pillar – The Request of Minimum Capital ..................................................... 17
         3.5.1.1 The Standard Approach ....................................................................................... 17
         3.5.1.2 The IRBA – Internal Ratings Based Approach ...................................................... 18
         3.5.1.3 Operational Risk ............................................................................................... 20
         3.5.1.4 Market Risk ....................................................................................................... 21
      3.5.2 The Second Pillar – The Control Process of Banking Supervision ................................. 21
      3.5.3 The Third Pillar – Extended Disclosure ....................................................................... 22
   3.6 Implementation of Basel II on European and National Level ............................................. 22
      3.6.1 The Influence of the European Union ....................................................................... 22
      3.6.2 Differences of the European Directives to the Framework of Basel II ......................... 23
      3.6.3 Implementation of Basel II on a National Level .......................................................... 23
   3.7 Consequences for Institutes of Basel II ............................................................................... 24
      3.7.1 Quantitative Impact Study 5 (QIS 5) ......................................................................... 24
         3.7.1.1 Impacts on Basel II MCR to Reduce Credit Risk .................................................. 24
         3.7.1.2 Impacts on Basel II MCR Approaches to Reduce Operational Risk .................... 27
         3.7.1.3 Impacts on Basel II’s MCR Approaches to Reduce Market Risk .......................... 27
      3.7.2 Requirements to Costs and Resources ........................................................................ 28
      3.7.3 Impacts on Credit Pricing ........................................................................................... 28
         3.7.3.1 Main Impact on Credit Pricing ............................................................................ 28
         3.7.3.2 Other Impacts Linked to Credit Pricing ............................................................... 29
      3.7.4 Impacts on Competition .............................................................................................. 29
         3.7.4.1 Competition Between Banks in Terms of Price and Demand .............................. 29
         3.7.4.2 Competition Between Banks in Terms of Profitability ........................................ 30
         3.7.4.3 Competition in Term of Credit Rating, Credibility and Reputation ..................... 30
4 SOLVENCY II – A MODEL OF SUPERVISION FOR THE INSURANCE INDUSTRY

5 COMPARISON OF THE TWO MODELS

6 CONCLUSION

7 RESEARCH CONSIDERATIONS & CREDIBILITY CRITERIA

8 SUGGESTIONS FOR FURTHER RESEARCH

APPENDIX

REFERENCES
**TABLE OF FIGURES**

Figure 1: Relations between different risks for banking and insurance industry __________ 12
Figure 2: Frequency of losses depending EL and UL ___________________________ 19
Figure 3: Capital requirement under BASEL I, Standardized and IRB approaches _______ 27
Figure 4: The three pillars of BASEL II ______________________________________ 31
Figure 5: Overview about the risks included in ESA ___________________________ 40
Figure 6: The three pillars of SOVLENCY II ___________________________________ 53
Figure 7: MCR and SCR under SOLVENCY II ________________________________ 53
Figure A: Expected timeline of SOLVENCY II ________________________________ 73

**TABLE OF TABLES**

Table 1: Change in Minimum Capital Requirement (MCR) under BASEL II ___________ 25
Table 2: % change in MCR due to operational risk ____________________________ 28
Table 3: Number of banks participant for each BASEL II approach, summary _______ 29
Table A: Population for QIS 5 _____________________________________________ 73
**TABLE OF ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIG</td>
<td>Accord Implementation Group</td>
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<td>AMA</td>
<td>Advanced Measurement Approach</td>
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<td>ATF</td>
<td>Accounting Task Force</td>
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<tr>
<td>BaFin</td>
<td>Bundesanstalt für Finanzdienstleistungsaufsicht</td>
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<td>BCBS</td>
<td>Basel Committee of Banking Supervision</td>
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<td>BIS</td>
<td>Bank for International Settlements</td>
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<td>BSCR</td>
<td>Basic Solvency Capital Requirement</td>
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<td>CEA</td>
<td>Comité Européen des Assurances</td>
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<td>CEIOPS</td>
<td>Committee of European Insurance and Occupational Pensions Supervisors</td>
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<tr>
<td>CF</td>
<td>Commodities Finance</td>
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<tr>
<td>CoC</td>
<td>Cost-of-Capital approach</td>
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<td>CR</td>
<td>Capital Requirement</td>
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<td>EAD</td>
<td>Exposure at Default</td>
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<td>e.g.</td>
<td>for example</td>
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<td>EL</td>
<td>Expected Loss</td>
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<td>ESA</td>
<td>European Standard Approach</td>
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<td>EU</td>
<td>European Union</td>
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<td>G-10</td>
<td>Group of 10 countries within the Basel Committee</td>
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<tr>
<td>HVCRE</td>
<td>High Volatility Commercial Real Estate</td>
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<td>IAA</td>
<td>International Actuarial Association</td>
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<td>IAIS</td>
<td>International Association of Insurance Supervisors</td>
</tr>
<tr>
<td>IAS</td>
<td>International Accounting Standards</td>
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<td>IASB</td>
<td>International Accounting Standards Board</td>
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<td>ICBS</td>
<td>International Conferences of Banking Supervisors</td>
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<td>i.e.</td>
<td>in example</td>
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<td>IFRS</td>
<td>International Financial and Reporting Standards</td>
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<td>IFRSB</td>
<td>International Financial Reporting Standards Board</td>
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<tr>
<td>ILG</td>
<td>International Liaison Group</td>
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<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IPRE</td>
<td>Income Producing Real Estate</td>
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<td>IRBA</td>
<td>Internal Rating Based Approach</td>
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<tr>
<td>IT</td>
<td>information technology</td>
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<tr>
<td>Abbreviation</td>
<td>Definition</td>
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<tr>
<td>LGD</td>
<td>Loss Given Default</td>
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<td>M</td>
<td>Maturity</td>
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<tr>
<td>MCR</td>
<td>Minimum Capital Requirement</td>
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<tr>
<td>MNE</td>
<td>Multinational Enterprises</td>
</tr>
<tr>
<td>MVM</td>
<td>Market Value Margin</td>
</tr>
<tr>
<td>NL_PL</td>
<td>Expected profit or loss arising from next year’s business for Non-Life insurance</td>
</tr>
<tr>
<td>No.</td>
<td>Number</td>
</tr>
<tr>
<td>OF</td>
<td>Object Finance</td>
</tr>
<tr>
<td>p.</td>
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<td>pp.</td>
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<tr>
<td>RBS</td>
<td>Royal Bank of Scotland</td>
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<td>RPS</td>
<td>Reduction of Profit Sharing</td>
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<tr>
<td>PD</td>
<td>Probability of Default</td>
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<td>PDG</td>
<td>Policy Development Group</td>
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<tr>
<td>SCR</td>
<td>Solvency Capital Requirement</td>
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<td>SME</td>
<td>Small and Medium sized Enterprises</td>
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<td>PF</td>
<td>Project Finance</td>
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<tr>
<td>UL</td>
<td>Unexpected Loss</td>
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<td>US</td>
<td>United States</td>
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<td>QIS</td>
<td>Quantitative Impact Study</td>
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<td>VaR</td>
<td>Value at Risk</td>
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1 INTRODUCTION

The purpose of this first chapter is to present the situation within the banking and insurance industry to motivate the stated research problem and research questions. Moreover, the research objectives of the study, research approach and research method, addressees, delimitations and the outline of this work are pointed out.

1.1 PROBLEM BACKGROUND

Global economics with their individual national economies have to face a fast changing environment. The globalization of markets and competition due to worldwide networks are going to modify the constitution of economic systems. Modern communication technologies, the development of electronic infrastructures and computer networks increase technical possibilities and cause a worldwide and location-independent acting of companies and institutions\(^1\).

Financial systems play a decisive role within this system. The volatility of the supply and demand of currency can unbalance the currency market and financial institutions. The regulation between investments on the one hand and savings on the other hand represents the central task of the financial industry.

The stability of banks and insurances is a major issue for a global economic development. A stable and growing economy is based on the interaction of an efficient risk management\(^2\). Moreover confidence and protection requirements in the credit business and for the investors are fundamental aspects.\(^3\)

Due to different weaknesses of the market, e.g. external effects, market power misfeasance or simply through the asymmetric distribution of information between buyer and seller; a public regulation of banks and insurance companies is in general justified.

Under certain circumstances a breakdown of only one national system could compromise the whole financial system and the global economics. Various past financial disasters, on both local and global level, have shown how important hedging through restricting of the general framework within the financial industry is; and revealed a few flaws.

Supervision models provide protection of the financial system, which could be achieved due to adequate constructed regulated equity requirements.\(^4\)

Examples could be stated such as the economic and financial crisis of East Asia in 1997/1998, the Russian crisis in 1999 or the “dotcom-bubble” plummeting of the New Markets in 2000. In each case totally different causes were responsible for a rapid capital drain. The impacts were liquidity problems and bank insolvencies. This phenomenon began by spreading to all the banking chain and eventually led to an economic crisis.\(^5,6\)

\(^1\) Shapiro (2006), p. 34.
\(^3\) Hofmann/Pluto (2005), pp. 241-253
\(^5\) Chavagneux (2005), No. 65.
However, the security of the international financial system does not only depend on banks. As a result, today, banks, financial service enterprises, and insurance companies are competing on the same markets as in the insurance industry. If one examines the insurance industry it bears also a huge part of the responsibility to stabilize economic processes. It has to deal with the adjustment of single economic damages as well as with arrangements of risk management on a more economic level.\(^7\)

Its environment has significantly changed in the recent years and insurance companies have to face new features. In addition to risks like terrorism and elemental damages of unknown dimensions they are confronted with an increasing complexity of its business. For example, the terrorist attacks on the September 11\(^{th}\) 2001 triggered insurance-losses of 40$ billions. This event “put insurance in the spotlight”\(^8\).

Reasons for the decreasing stability in both sectors (banking and insurance) are the risks, which occur due to rising complexity and dynamic within the international financial markets. It is a matter of fact that those risks could be traded faster, but they could also be transfused much faster.\(^9\) This interconnection of originally branch specific risks is due to globalization and the fact that banks and insurances have subsidiaries across borders definitely to consider. Since subsidiaries could also default, the parent company would suffer from this. It becomes obvious that not only the regulations of the home country but also the regulations of the foreign country have to insure a reliable risk management. This is why a harmonized regulation within the financial market in each country should be established.

According to the general view, stability could only be granted due to an efficient and trustful supervision, which is based on reliable methods and procedures\(^10\). The key to accomplish this goal is to derive supervision models that basically deal with risk sensitivity and equity specifications to protect the whole system. Thus, due to the internationalization of banks and insurances the range of risks that have to be considered by the risk management has become broader.

Specific approaches which have existed for some time are not taking the real risk situation into account. The essential innovations and improvements of risk evaluating and managing techniques on the financial markets by simultaneously unchanged remaining equity regulations led to a rift in the legal rules for supervision and the internal assessment of financial institutes.\(^11\)

The European Union has decided to face this problem through two new supervision models.\(^12\) The BASEL II model for banks and the SOLVENCY II model for the insurance industry which shall solve this discrepancy.\(^13\)

For this reason the Basel Committee of Banking Supervision (BCBS) developed the BASEL II model.\(^14\) It should contribute to a more solid and stable global financial system and should

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\(^7\) Romeike (2003), pp. 22-25.
\(^12\) BCBS (2006c), p. 1.
\(^14\) Artus (2005), p. 77.
furthermore reduce the sensitivity of banking systems in terms of risk.\textsuperscript{15} An unchanged adoption of these agreements to the insurance industry is due to the specific goals and risk profiles not reasonable.\textsuperscript{16} That’s why an own supervision model with respect to solvency specifications (SOLVENCY II) will be employed for this sector\textsuperscript{17}.

\textit{Out of these considerations we derive our research problem and research questions.}

\section*{1.2 PROBLEM STATEMENT AND RESEARCH QUESTIONS}

\textbf{What are the potential consequences of the new supervision models BASEL II and SOLVENCY II for the financial industry?}

Out of this Problem Statement and the provided Problem Background the following sub-questions could be derived. These sub-questions will help to fully answer the Problem Statement.

1. What are the industry specific risks within the banking and insurance branches?
2. Why are supervision models needed within the financial industry? (Necessity)
3. What do the models BASEL II and SOLVENCY II consist of?
4. How are these models implemented?
5. What are BASEL II’s and SOLVENCY II’s potential effects on the banking and respectively insurance industry?
6. How different or similar are both models?
7. Do BASEL II and SOLVENCY II contribute to harmonize the regulations within the European banking and insurance industry?
8. In which way does BASEL II help to anticipate the developments of SOLVENCY II?

\section*{1.3 RESEARCH OBJECTIVES}

The main objective is to figure out which impacts may occur for the financial institutions. To achieve this main goal some sub-objectives have to be reached.

At first the different relevant risks within the banking and insurance branch have to be pointed out in order to understand the situation the two supervision models have to face.

Secondly, it has to be pointed out why supervision and regulation is necessary within these industries.

Thirdly, it has to be introduced how the supervision models are constituted and how they are implemented, in order to be able to reveal potential impacts, which might occur inside banks and insurances.

Fourthly, similarities and differences of the models regarding objectives, conception, and impacts have to be figured out, to reveal to which extent both models contribute to a harmonization within the European banking and insurance industry.

\textsuperscript{15} European Commission (2002a), p. 4.
\textsuperscript{16} Schubert/Grießmann (2004), pp. 1399-.
\textsuperscript{17} European Commission, (2002b) pp. 2-3.
Finally, the comparison of the impacts of both models should support the contemplation of future developments and anticipations. Here SOLVENCY II may benefit from the lead of BASEL II.

1.4 RESEARCH APPROACH

An analytical normative literature study will be used to gather the required information out of books, articles, working papers and other studies. We have taken a positivistic viewpoint to examine this topic. Since we would like to draw general conclusions about possible consequences of both models, a “small” quantitative study, which we could have performed by ourselves through questioning some banks and insurances, would not have been sufficient to provide generalisable information. Especially the usage and examination of the Quantitative Impact Studies was expected to add a lot of valuable information to our study. Therefore only an extensive analytical normative literature study could be considered to meet our aim.

As it is important to have an overview of both models we are going to present BASEL II and SOLVENCY II in a descriptive way (descriptive approach).

The thesis could be considered as an analytical study to anticipate the potential impacts of BASEL II and SOLVENCY II for financial institutions.

In this way, the authors try to reveal cause-effect relations between the construction of the models BASEL II and SOLVENCY II. This goal will be supported by the carried out Quantitative Impact Studies (QIS), which were performed by the supervision authorities and the European Union, and the resultant impacts on the financial companies and the financial industry. Furthermore, some recommendations and anticipations for SOLVENCY II – out of the development of BASEL II – should be derived.

1.5 RESEARCH METHOD

To accomplish our first sub-objective a conceptual framework of the relevant risks for the banking and insurance industry will be derived. This is done by defining the essential risks for banks and insurances and pointing out why they need to be regulated and how this is done. The conceptualizing of the different risks of the banking and insurance industry is necessary, because this thesis is going to examine, in which way BASEL II as well as SOLVENCY II have to face and to deal with the different industry specific risks for banking and insurance. Consequently, financial risks have to be explained in order to understand the construction and intention of these models.

In order to achieve our goals we are first going to deal with the BASEL model and the banking sector and thereafter with the SOLVENCY model and the insurance industry. This order was chosen due to the timeline structure for BASEL and SOLVENCY. The BASEL “project” was designed prior to SOLVENCY.\(^\text{18}\)

The objective of proving the necessity of the supervision within the industries will be accomplished by presenting the previous situation within the respective sector. Also a brief description of the regulations of BASEL I and SOLVENCY I is presented. Together with the presentation of the development within the respective branch the necessity of BASEL II and SOLVENCY II will be derived.

In order to show how the two models work out, the main contents and functions are first presented to the reader. This is carried out in a context of interconnecting operations and differentiated risk profiles, in international financial institutions.

To obtain potential consequences/impacts the previous presented constitution of BASEL II and SOLVENCY II is analysed. For this part also the carried out Quantitative Impact Studies, on BASEL II as well as on SOLVENCY II, will be included to support the analytical investigation of the models. This is needed to identify possible impacts of both models.

To be able to point out similarities and differences of both models concerning structure, objectives and potential impacts, both models will be compared.

The obtained information of this analytical process will be used to state to what degree both models contribute to a harmonisation within the financial industry. Moreover, this information will be interpreted in order to acquire some anticipation for the future impacts of SOLVENCY II. For this purpose some conclusions are drawn from the development of BASEL II, since SOVLENCY II is orientated on BASEL II and therefore its development might be similar.

The interpretation of the information and some final considerations are made to derive some suggestions about the future development/consequences of BASEL II and SOLVENCY II will be made.

1.6 Address of this Thesis

The thesis will be useful for supervision authorities (regulators), banks, insurances and at the far end the private economy.

For regulators this work could be worthwhile to improve and adjust the models and guidelines, since potential impacts on the regulated area will be pointed out.

Since we are going to derive some recommendations and anticipations for the implementation and impacts of these two new supervision models, our findings might be useful for banks, which are gradually implementing BASEL II, insurances, which will implement SOLVENCY II and every banks that have some insurance activities inside their organisation. This is the case for banks that have acquired insurance activities through mergers and acquisitions such as Royal Bank of Scotland Group (RBS), one of the 10 largest groups in the world, due to Churchill insurance and Direct Line Group, Acquisitions19. Merger and acquisition trend has been observed on a wide scale.20

Moreover, most of the global investment banks, which offer not only financial products for customer, but also insurance products such as unemployment, business, broker, health, house, car, health and life insurance products could benefit from the outcome of this thesis.21

As BASEL II and SOVLENCY II do influence the financial institutions it will also affect banking and insurance products. This might be of public interest, since the consequences will influence the overall economy (SME, MNE, individual customers).

21 An American study has observed that 86.2% of small and medium banks and 86.4% of the largest banks develop insurance sales. That’s why some parts of the banks have to implement SOLVENCY II to manage risks of their insurance activities. These banks are both concerned by BASEL II’s and SOLVENCY II’s effects in the coming years. (Gottlieb (2004), p. 16.)
1.7 DELIMITATIONS

Since SOLVENCY II is not on time and the first European guideline will probably appear earlier in autumn 2007; this thesis has examined the current stage of the development, the general guidelines and the standard models. More thorough analyse was not possible, since no directive exists yet. So far, there are only two impact studies performed and analysed.

In addition, the amplitude of both models leads to study the core elements of both supervision models. Moreover, only the European level will be considered. The national levels are excluded. There are several reasons for this: On the one hand there would be more than 100 different countries to examine (for BASEL II, since this model will be implemented all over the world) and more than 30 countries for SOLVENCY II, which would be much too complex for a study of the claimed size. On the other hand SOLVENCY II is aimed at European countries only. Furthermore, the regulations for SOLVENCY II are within the “shaping” process. Therefore a consideration of the specific national regulations that would be based on these uncompleted European directives is not possible for us at this point in time. However, by delimitating the work in this way, a comparison of both models could already be performed now.

1.8 OUTLINE OF THE THESIS

Chapter one gave an overview about the problem background, the problem statement and research questions were stated, research objectives, research approach and research methods were presented, the addressee of this thesis, the delimitations and an outline of this work were shown.

Chapter two will provide a conceptual framework about basics of risks. In particular the different types of risk for the financing and the insurance industry will be determined and characterized. Subsequently, the shaping out of BASEL II and SOLVENCY II will be displayed. This will be performed in chapter three for BASEL II and in chapter four for SOLVENCY II respectively. Each of these two chapters provides a short overview about the previous situation of the supervision, the development, implementation, constitution and as far as possible the results and impacts of the carried out Quantitative Impact Studies (QIS) of the respective model.

In chapter five a fundamental comparison is performed against the background of implementation and possible consequences for the financial service industry. New international accounting standards have to be taken into consideration though financial institutions e.g. according to IAS 39 or IFRS.

The final chapter six handles with the summary of the results under a global viewpoint and provides conclusions to the initially presented problem. Therefore the answers of all research questions will be put together. Furthermore, based on the findings of chapter five recommendations and anticipations for the future development of the models will be presented. In addition a short outlook on the future development within the financial industry due to supervision is presented.

Chapter seven deals briefly with the preconceptions of the authors and credibility criteria applied on analyzed sources, articles, newspapers and books.
2. **RISKS FOR THE BANKING AND THE INSURANCE INDUSTRY**

This chapter is used to present a conceptual framework about the different relevant types of risk for the banking and insurance industry. This is necessary to make clear which risks are relevant within an international context and have to be faced by banks and insurers and their respective subsidiaries. These risks are then considered later in this thesis, while examining BASEL II and SOLVENCY II to see if these supervision models could adequately manage them.

2.1 **BASICS OF RISK**

In general, risk is defined as a hazard, a danger, or the possibility of loosing while taking uncertain actions.22

However, there is no uniform definition of the term “risk” in theory and real life. For that reason are only relevant risks according to the financial business presented in this thesis. Thereto will follow some basic aspects:

- Financial risk considers the danger of an aberration of the reality from in the past stated financial goals. For that reason the long-term financial balance for companies can be disturbed. For example a strong deprivation of equity and/or debt could cause an inability to repay a credit.23

- Each corporate activity is related to different kinds of risk. Risks appear due to the incomplete knowledge and estimations about future impacts of corporate decisions and the development of external factors. The relevant impact factors for a decision are manifold and therefore impossible to control completely over time.24

All activities within both the banking and insurance sector contain specific and general risks. Credit risk can be considered as the bank specific and underwriting risk as insurance specific. Other risks are more general and tend to be connected within the sectors. The sources of these risks are multifaceted and will be presented within the subsequent paragraphs. This will be done with respect to industry specific characteristics.

2.2 **RISKS OF THE BANKING INDUSTRY**

In this field of business are three types of risk dominant, which could have direct or indirect impact on gains and losses. These are: Credit risks, market risks and operational risks. Those three main risks will be examined in the following parts.

2.2.1 **CREDIT RISK**

Credit risk could be considered as the most important risk category for the banking sector. In a narrower sense it describes the danger that a loan taker is not able to repay the loan or at least not on time. This is also called “default risk”.25 From that results a potential loss of the given capital, including interests. Cumulative defaults were the main reasons of bank insolvencies in the past.

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The credit risk may also be determined by five general criteria: “Five Cs Credit”

1. Character: The customer’s ability to meet its credit requirement.
2. Capacity: The customer’s ability to meet its credit requirement without taking into account its current cash flow.
4. Collateral: A specific pledge of property if there is a default.
5. Conditions: Major economic, country, political risks.

In the broader sense credit risk depicts the risk of a declining credit rating (degree of creditworthiness). This would lead to a revaluation of respective stock. The importance of credit risk analysis, also with regard to BASEL II, has risen strongly in the recent years and risk management systems of banks are enlarged.

2.2.2 Market Risk

This kind of risk deals with the chance of an unfavourable trend of the financial markets. The sensitivity of a fund or other financial instruments to the market price considering e.g. a fluctuating exchange rate, equity risk, commodity risk, inflation, and interest rates could cause potential losses.

Equity risk is the risk of stock price volatility or fluctuation. This risk is determined by speculation: How risk averse is the investor? Is the risk sensitive, risk neutral, risk lover? It also depends on how the investor portfolio is diversified. A well diversification portfolio may reduce the systematic risk.

Interest rate risk is the risk of interest rate’s fluctuation. If the interest rate and the price in general are not stable, it may trigger an incapacity for the borrower to pay back a loan. Indeed, as the loan’s price increases, it makes the lender less solvent. So this uncertainty in terms of interest rate’s fluctuation is a risk for the banking sector.

Exchange rate risk or currency risk is the risk that the value of the investment, a fund, cash flow, a firm, a bank or insurance if affected by the exchange rate’s fluctuation between two currencies.

Commodity risk is the risk of the commodity prices’ fluctuations such as grain, metal, gold, oil. These changes may affect the cash flow of a company, which then may be insolvent regarding the bank.

The market risk is the possible loss, which occurs due to the uncertainty of the future development of risk factors and that goal factors (e.g. the portfolio of financial instruments) differ negatively from a certain reference value. Possible reference values could be market value, book value or share price of the factor.

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28 Bodie/Kane/Marcus (2005), pp 170-224.
Banks often use “stress-testing”\(^{32}\) or scenario analysis or the Value-at-Risk (VaR)\(^{33}\) to assess the possible changes of risk parameters of security or credit portfolios, which occur if it comes to a shock. Due to a good amount of information within this area are tests relatively easier to perform than in other areas. The main focus of these tests is mostly the risk of changes in the interest rates.\(^{34}\)

### 2.2.3 Operational Risk

Thanks to the fundamental economic changes during the late 1980s exists another type of risk next to the well-established risk types, which should not be forgotten – the operational risk or operative risk. This kind of risk concerns as well the banking as also the insurance industry.

This kind of risk describes “the threat of losses due to a breakdown of internal measurement practices, human decisions and other systems aroused by external events”.\(^{35}\) Some of these external events could be fires or other disasters, human failure, fraud, inadequate internal controls, or a failure of management information systems.\(^{36}\) But also legal risks like the chance of amendments in the range of consumer and investor protection have to be taken into account. However, strategically risks or reputation risks are not included.\(^{37}\)

Although in the past operational risk were not considered by supervisory regulations it plays an important role. By the reason of an increasing complexity of the business activities of banks, due to outsourcing, growing dependency from information technologies (e.g. electronic banking) classify banks this kind of risk as the second important one after credit risk.\(^{38}\)

Until now there is no standardized approach to quantify operational risk, therefore arranged BASEL II three approaches for the necessary equity requirements, which will be presented in chapter three.

### 2.3 Risks of the Insurance Industry

The core business within the insurance industry is the hedging of risks.\(^{39}\) An insuree transfers its own risk, of an unexpected and disadvantageous event, trough a premium to the insurance company. Therefore insurance companies bear always the risk of being accessed by these insurees in the case of a damage event.

Also insurances have a multilayered profile of risk. The main risk layers are underwriting risks, investment risks and operational risks.\(^{40}\) Moreover the Asset-Liability-Mismatching has to be stated. Due to the fact that the intrest of supervision focuses not on firm specific risks but more on industry specific types of risk; other economic risks, which result out of the value chain and are

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\(^{32}\) Stress testing is used to analyse the stability of a financial instrument beyond certain crashes in order to investigate its robustness. In contrast to scenario analysis also combinations of several stressors (influencing events) could be tested simultaneously.

\(^{33}\) For further information about VaR, see chapter 3.5.1.4 (p. 20).

\(^{34}\) Deutsche Bundesbank (2004), pp. 79-88.

\(^{35}\) BCBS (2004b), p. 137.

\(^{36}\) Cluse (2005), pp. 19-21.


\(^{38}\) Deutsche Bundesbank (2001), p. 28.

\(^{39}\) K. Sundström (2004), p. 3.

\(^{40}\) Ludka (2005), pp. 205-211.
indeed part of the risk management of the company like exercise risks, risks of goods and services, as well as sales risks, and financing risks, will not be further considered in this thesis.

2.3.1 Underwriting Risk

Insurance companies have to face some specific risks in addition to the traditional risks of business, which depends on the design of their business activities. These are risks that are directly related with the underwriting business.

The underwriting risk is referred to the threat that the sum of maintained risk premiums, revenues from investments and security capital will not be enough to face future insurance payments, which are more less losses for the company. This is due to the fact the future liabilities, resulting from damage events, are not exactly known by the insurance company.\(^{41,42}\)

There exist several theories that try to determine these variations more in detail. The most common one is based on Farny. He cuts the underwriting risk into three subrisks: the risk of chance, the risk of change, and the risk of error. The risk of chance referred to the risk that a situation develops in an unexpected way, although there are statistical experiences of many years (luck or misfortune). Risk of change is related to an increase or decrease within the loss experience due to political, technical or social changes. The risk of error results out of the opportunity of wrong estimation of the future amount of damage due to a failure in the assessment process.\(^{43}\)

Depending on the branch’s particularities arise some further subcategorisation into Life insurance, Damage/Accidental insurance and Health insurance. These categories explicitly considered by SOVLENCY II, as will be discussed more in chapter four.

The Risk of uncertainty occurs for insurance when the probability of an unexpected event is high. Some events such as catastrophes (terrorism), liability lawsuits equity, and market failure create the underwriting risk.\(^{44}\) Due to uncertainty, it may be difficult for the insurer to ensure a high premium to cover losses. This is only way to reduce this underwriting risk is to diversify the portfolio of insurees. By choosing customer with different profile, the risk may be reduced. Diversification helps the insurance to find the optimal portfolio, the portfolio that allows the premiums to cover losses.\(^{45}\) The insurance will also ask for a higher premium when the insuree is risk averse, or simply risky for the insurance itself. The higher is the risk, the higher is the price for the insuree.\(^{46}\)

Other influences on the underwriting risk are factors such as the selection on the insuree and the risk of Moral hazard\(^{47}\) increases uncertainty and risks. Adverse selection happens when the population and the probability of accident are not well diversified. But sometimes, the insurer does not have a high level of private information about insuree and risk may be higher. Moral Hazard happens due to the insuree’s choice of action that will have an impact on the insurance’s welfare.\(^{48}\) This also represents a risk for the insurance.

\(^{44}\) Carson/Doran/Peterson (2006), p. 3.
\(^{45}\) Breuer (2005), p. 537.
\(^{47}\) Ungern-Sternberg (2004), p. 16.
Indeed, a risk adverse insuree will increase the degree of the insurance’s bad state in the future. This may create a source of conflicts between insure and insurance and a loss of money in the future.\footnote{Sundström (2004), p. 25.}

\subsection*{2.3.2 Investment Risk}
This kind of risk has direct influence on those investments, which were undertaken to cover promised indemnification payments. It includes default risk for fixed income positions, market changing risk due to share price of shares or interest rate changes for immovable property, foreign currency risk especially for fixed income positions and immovable property and concentration risk, that is a term representing the overall spread of a company’s outstanding accounts over the number or variety of creditors to whom the company has lent money.\footnote{Wiegers (2005).} Basically, these risks are comparable to the market risk within the banking sector (see chapter 2.2.2).

Another relevant impact of investment risks appears while considering the asset-liability-management. This is the reconciliation between revenues of investments and the mature indemnification payments. Therefore it could be considered as intercepting point between investment management and damage management. They normally use return optimizing to control assets and liabilities that includes the risk structure of the promised payments.\footnote{Jimeno/Lohse (2002), pp. 9-10}

Nonconformities upon grace periods of assets and liabilities (that is that assets do not cover liabilities in a certain point of time) or dispositions and market conditions are the biggest problems. The mismanagement of such factors creates a gap between asset and liabilities. This gap could lead to strong solvency problems, if they are not adequate considered. This problem is called Asset-Liability-Mismatching and has to be taken into account by insurance companies, even more because asset-liability mismatching has a wide variety of forms, as markets become more sophisticated and global.\footnote{Grosen/Jørgensen (2002), p. 64.}

\subsection*{2.3.3 Operational Risk}
The insurance company may also be affected by the \textit{operational or management risk}, which is due to an internal failure in the insurance’s organization. For example a fraud will represent a risk for the overall insurance company. This also creates an indirect bad effect on the reputation of the company.\footnote{Vangel (2005), p. 74.} So even if this failure occurs in a legal entity or a business line of the insurance company, it will affect the overall organization. If some regulations reduce the operational risk, then it will have a positive effect of the insurance’s brand image.

\section*{2.4 Risks Are Globally Interconnected (Chapter Summary)}
The outlined risks above show that both banks and insurance companies work within a multiparted milieu and that a sufficient risk management and measurement is essential. In which way the different risks are related is visualized in the Figure 1.

First, it is obvious that financial risks are interconnected not only between both sectors, but also on the international level. Considering credit risk, the parent bank could be hurt by a defaulting
subsidiary. It is also obvious that exchange rate risks, interest rate risks and commodity risks depend on the demand for currency for each country. This could affect especially banks and insurances that are acting across borders. In this case the risk management of the firm should be able to hedge against these international risks. Here BASEL and SOLVENCY should provide support and assistance.

As shown on Figure 1 these interconnections between risks can create a contagious phenomenon for the financial institutions. This occurs if banks are clients of insurances. A default of a bank could lead to threaten the solvability of the insurance. The contrary may also occur if the insurance could not pay its obligations to the bank.

![Figure 1: Relations between different risks for banking and insurance industry (own-made).](image)

For banks are credit risks and operational risks the most important ones to take into consideration. Insurers have to deal mostly with the underwriting risk and its subforms. Moreover, the right balance between assets and liabilities is an indispensable task for insurance companies. If this is not considered properly the company could ruin itself. This kind of risk is also interconnected to the investment risk.

Although both businesses are working not exactly in the same markets and their decisions they have to handle are unlike in most instances, they still have to face some kind of similar risks. Market risks for banks, investment risk for insurers and the respective operational risks are quite comparable, because they consider similar decision-making processes.

BASEL II and SOLVENCY II exist, because the way of managing the risk is different for both banking and insurance sector.

*The following chapters three and four are now going to present the models of BASEL II and SOLVENCY II, their historical development, reasons for their creation, their needs of improvement, as well as their impacts on the respective companies.*
3 BASEL II – THE NEW EQUITY AGREEMENTS OF BASEL

This chapter is based on BASEL II’s development. It will provide an overview of the necessity of BASEL, in terms of capital requirement, the creation of BASEL I and BASEL II. The presentation will take into account the international financial risks mentioned in chapter two, like credit risks, market risks and operational risks for international banks and their subsidiaries. It will also emphasize on BASEL II’s worldwide implementation because some differences between countries may exist in terms of regulation. And last, an analysis about the effects of BASEL II will be provided. Some impacts on different types of banks, and companies will be analyzed. This chapter is required to perform a comparison with the SOLVENCY II model.

3.1 THE BASEL COMMITTEE FOR BANKING SUPERVISION (BCBS)

The board of BASEL is the main actor of the BASEL I and BASEL II’s creation. A quick overview about its history and objectives will help to understand the way BASEL II is implemented.

History and composition of the committee

The Basel Committee has been created in 1974 by central banks of 10 countries (G-10). Members of the committee are from different countries such as Belgium, France, and Germany. The central bank represents each country inside the Basel Committee. So Basel Committee is composed of central banks and regulators. The actual chairman of the committee is Jaime Caruana, president of the Netherlands bank. The committee is divided into four groups:

- **The Accord Implementation Group (AIG):** It plays a key role in the implementation of BASEL II, in its promotion and communication.
- **The Policy Development Group (PDG):** It provides recommendations, analyzes how well BASEL II has been implemented and organizes surveys and questionnaires on the global level about this model.
- **The Accounting Task Force (ATF):** It has a key role in the implementation of international accounting and auditing standards. This will improve bank’s transparency; which is also the main objective of BASEL II.
- **The International Liaison Group (ILG):** It develops forum with supervisors of 8 different central banks to speak about different broader issues linked to their engagements (such as BASEL II and relationships with other economic issues).

The secretariat of the committee is represented by 15 persons, principally professional supervisors and members of other institutions. Contacts and communication is very important for the committee to allow several countries to be involved in the process of BASEL II on an international level. These contacts have also been developed with the International Conferences of Banking Supervisors (ICBS).

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56 BIS (2007).
**Objectives of the committee**

The objectives’ analysis of the committee is important to know as it strongly influences the main objectives of BASEL II. Like other financial organisation such as International Organization of Securities Commissions, the International Association of Insurance Supervisors, the Basel Committee on Banking Supervision ensures the financial stability by reducing the systematic risk, i.e., the risk that affects the overall market. Basel committee will develop regulations, standards, codes and rules that may be applicable in both developed and developing countries.

The main objectives of the Basel Committee are the international harmonization of financial regulations and the international supervision coverage of countries. For example, the establishment of Basel Capital Accord in 1988 provides credit risk measurement for all the countries all over the world. This text will be the fundamental for banks and their way to assess and manage risk. Theses global regulations will strengthen banks in general.

### 3.2 Reasons for New Rules of Equity

A lot of insolvencies of loan takers at the beginning of the 1990s, which led to a drastically reduction of equity within bank, was the crucial factor for developing new rules of equity. The industry realized more than before that equity is necessary to handle unexpected operational and/or internal risks. The current equity coverage was not sufficient, what bore an essential risk for banks. Some banks could not manage to compensate the big losses due the mentioned credit defaults and ended up in bankruptcy. Moreover uniform competition rules were needed, since many banks started to operate on an international level.

Therefore the Basel Committee on Banking Supervision tries “to arrive at significantly more risk sensitive capital requirements” for “the stability of the financial system”. This is linked to the risk of lending and the right amount of provision, i.e., the capital requirement to reduce the risk of non-solvability or the credit risk. This will be done efficiently if the bank manages this risk on two levels: It needs to manage both its credit risk (on the bank’s level) and its client’s credit risk. By ensuring a right capital requirement on the bank’s level and on the client’s level, this will cover the potential bank’s future losses.

On one side, the capital requirement will limit the possibility for a bank to provide loans because its provision should be sufficient to cover losses. If this provision is not adequate, this will create a problem of insolvability. Numerous banks have already faced this “Credit Crunch”.

On the other side, a company needs also to have sufficient provision in case of a negative scenario. The bank will provide a loan regarding this capital amount inside the company. So the model of BASEL I and II is discipline for borrowers (bank’s client) and lenders (the bank itself).

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57 Feig (2005), pp.18-19.
58 Kern (2006b), p. 79.
60 World Bank (2005), p 110.
64 World Bank (2005), pp. 112-113.
That is why BASEL I and II will provide a risk-weighted system that reflects the loss history of a specific company or a bank and the type of loan. This system has the characteristic to be particularly sensitive to counterpart risk. This system and its effects will be explained more precisely in the part 3.5 and 3.6.

3.3 BASEL I – THE FIRST STEP

Basic explanations of BASEL I will help the reader to better understand the following part based on BASEL II’s implementation.

BASEL I has been created by the Basel Committee. It’s also named as “1988 BASEL Accord” because this accord has been enforced by the “Group of 10” countries (G-10) in 1988. This accord mainly focused on credit risk.

Credit risk’s reduction, main objective of BASEL I

BASEL I is based on the necessity to link the bank’s capital to its risk. Considering its type of assets, the bank will have a specific percentage of capital requirements to protect themselves against losses. The key idea of this system is build on “the risk weighted asset”. This is given by the Cooke Ratio or the SOLVABILITY Ratio:

- Cooke/Solvability Ratio ratio is equal to:

\[ \text{Capital requirement } \% \text{ for a bank} = \frac{\text{Capital}}{\text{Risk weighted Assets}} \times 100\% . \]

  - The capital required should be at least 8%.
  - The capital is what belongs to a bank (cash, share, stocks, earnings...). It’s one part of the Assets.
  - Total Assets (cash, investments, inventories) = Total Liabilities (Accounts payables, debts, stocks).

BASEL I divides financial institutions into 5 families depending on their risk weights: 0%, 10%, 20%, 50% or 100%:

- 0% is assigned for non-risky assets. The asset composition of these banks is not risky and credit scoring (credit assessment) is AAA. It’s composed of cash, US treasury bonds (short term bonds), and Federal Reserve stocks. The capital required is zero.

- 100% is assigned for one of the most risky assets. The asset compositions of these banks will affect the financial health of banks. Credits scoring for these banks are B-. It’s made of loans, long term claims, long term bond, intangible assets and unconsolidated subsidiaries.

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66 Carling (2002), p.3.
72 Vangel (2005), p.72.
These assets are viewed as “off balance sheet”, but it is desirable to have as much assets as possible “on balance sheet” in order to represent the true value. This should be translated into “on balance sheet” with a conversion factor. This translation will allow weighting the risk of asset depending on the long term and short view. Indeed, long term loans, long term bonds are riskier than short term loans and bonds.

**The target ratio**

An international bank has to maintain exceed a capital percentage of 8% of its assets as a standard ratio and 4% of its core capital to cover losses:

- Capital requirement % for a bank = 8 % ≥ Capital / risk weighted assets.
- Capital requirement % for a bank = 4 % ≥ Core capital / risk weighted assets.

So Capital requirement amount with BASEL I model is equal to the amount of capital for credit risk. Core capital is “basic equity” or also known as “Tiers 1 capital”, which is the most reliable and liquid measure of shareholders’ equity: For example, earnings, commons stocks and preferred stocks are “Tiers 1 capital” or “Core capital” because they are reliable and non-cumulative. This is different from the cumulative capital known as “Tiers 2 capital” (which includes cumulative preferred stocks). It’s important to determine the distinction between “Tier 1 capital” and “Tier 2 capital” because it will affect the amount of capital required for a bank to protect against losses. This is different between national and international banks, because requirements are not the same. This objective should have been achieved within a 4 year transition period (the deadline was 1992).

### 3.4 BASEL II – THE DEVELOPMENT

**Reasons for BASEL II’s development**

Globalisation and developments within the European Domestic market did change the countenance of the financial markets due to interconnections. Standardisation of equity requirements were needed to face these changes in risk. However, the fast development of the information technology (IT) also improved the internal risk evaluation of credit risks or operational risks for especially big banks. Resultant from that, a discrepancy between supervisory regulations (BASEL I) and internal estimates rose.

In June 2004, according to these facts, the BCBS has published the “International convergence of capital measurement and capital standards, a revised framework”, the “New Accord” or more simply “BASEL II”. This “New Accord” has been signed by 13 countries, members of the Basel committee. The majority of regulators all over the world have agreed to implement it with different laps of time. While BASEL I focused only on credit risk, BASEL II is based on a broader range of risks. This is essential since the former regulations were too weak and static according to the credit risk. Nowadays there is a much more complex risk environment to consider. To ensure

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77 Thelen-Pischke/Loch (2004), pp. 723-733.
market discipline and stability, BASEL II needs to take into account not only the credit risk, but also other sources of risks, already mentioned in the chapter 2.2 such as market risk and operational risk. It also provides new adequate sophisticated methods to assess the risk inside a bank. These methods should also better identify the capital requirement considering the risk inside a bank. These methods will be explained in detail in part 3.5.

The scope of application

BASEL II is applicable for all international banks including tiers that belong to the group. So it has an application on the international level. This includes banks, securities and other financial subsidiaries. It also includes important investments and other financial entities.

3.5 THE CONSTITUTION OF BASEL II

It appeared that BASEL I was not sufficient enough to completely manage the different kinds of risks. Nowadays, banks have to face not only credit risk, but a huge variety of risks. This chapter presents the three pillar strategy of BASEL II and shows how these risks are included into the new approach. This structure is visualized and summarized in fig. 4 in chapter 3.8 (p. 31).

3.5.1 THE FIRST PILLAR – THE REQUEST OF MINIMUM CAPITAL

The first pillar deals with the three main risks that a bank has to face nowadays: Credit risk, Operational risk and Market risk.

To make it simple, the bank still needs to calculate the Minimum Capital Requirement (MCR). It was based on the COOKE ratio for BASEL I and the risk weighted asset of the credit. Now, it’s based on the DONOUGH ratio for BASEL II. In this ratio, it will take into account the three kinds of risks and calculate them with precisions.

- DONOUGH ratio, MCR % or SOLVENCY ratio:
  - 8% ≥ Capital / risk weighted asset for credit, market and operation.
  - CR for BASEL II = Credit risk CR + Market risk CR + Operational risk CR.

So, each kind of risk has to have its individual securitisation with capital.

As the credit risk is the most important risk for a bank, this part will first analyse the way the Standard Approach and Internal Rating Based Approach (IRBA) will manage it. Then, it will focus on how the two other types of risk can be managed through the first pillar.

3.5.1.1 THE STANDARD APPROACH

The Standard Approach is nearly the same than in BASEL I for the Minimum Capital Requirement (Capital / risk weighted assets). Only one new risk class 150% has been added, which is reserved for loan taker with a bad credit rating. So it is the basic analysis of credit risk. But the main

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84 Deutsche Bundesbank (2006).
85 World Bank (2005), p. 120.
difference compared with the Standard Approach in BASEL II with BASEL I is, that BASEL II takes into account a wider range of credit risk. This can be viewed with “the credit risk mitigation” (credit risk reduction) inside a bank will collateral. Banks usually use collateral to reduce the risk of the counterparty (client of the bank). For instance the client’s exposure may be reduced thanks to cash, securities or a third party. A bank may also use credit derivatives and SWAP to protect against various forms of credit risks.\textsuperscript{86} The Standard Approach is especially good to use for small banks (at least in the beginning), which only have a low degree of risk management. Bigger banks will probably not use this approach, since they have their own internal risk control system.\textsuperscript{87} By calculating the Minimum Capital Requirements (MCR) there are two methods to determine the risk weighted assets:

1) \textit{Simple method}: This method is based on the risk weighted asset of the collateral instrument; i.e. the instrument that hedge the counterparty in case of default. So in this method, the analyst simply substitutes the risk weighted asset of the counterparty by the collateral’s one.

2) \textit{Comprehensive method}: This method is based on both risk weighted asset of the collateral and the counterparty. This is more adequate since it is done proportionally to the amount of exposure.\textsuperscript{88}

Generally speaking, the better the credit scoring or credit assessment of the collateral, the lower its risk. This reduces the counterparty’s risk and the capital requirements. Further that allows a better coverage of credit risk’s exposure. For example, if the collateral is scored A+ (compared to A-), it will be better for the counterparty.

The main disadvantage of this method is that it may create residual risks or indirect risks even if the main objective is to reduce credit risks. Residual risks are legal, market and operational risks. These indirect risks will be managed by Pillar II and III.\textsuperscript{89}

\textit{The standard approach is the simplest method to measure and reduce the credit risk. This help banks to adopt BASEL II in an easy way. The following part provides a more complex approach with a higher degree of precision of risks.}

\textbf{3.5.1.2 THE IRBA – INTERNAL RATINGS BASED APPROACH}

IRBA takes into account a lot of variables to assess the credit risk for a bank. This method is much more precise and adequate to determine Minimum Capital Requirement and anticipate the risk. As it’s a complex method, it has to be approved by the banking supervision before banks can use it. Without entering too deeply into details of the complex formulae, this part will provide an overview of IRBA. This will be useful to analyse the effects of such a method on banks.

First, IRBA includes new criteria such as PD (Probability of Default), LGD (Loss Given Default), EAD (Exposure at Default) and M (Maturity). These variables will affect the risk of the counterparty. In addition to this, IRBA is founded on EL (Expected Loss) and UL (Unexpected Loss). These components will also determine the risk of the counterparty.

\textsuperscript{87} Cluse (2005a), pp. 27-28.
\textsuperscript{89} I. S. (2004), p. 25.
And last but not least, by using IRBA, the asset classes have to be defined. This will determine the nature of the borrower, its potential risk, so it will influence its risk weighted assets. The borrower can be classified into 5 ranges of assets: corporate, sovereign, bank, retails and equity. Inside the corporate class, there are sub-classes of “specialized lending”: PF (Project Finance), OF (Object Finance), CF (Commodities Finance), IPRE (Income Producing Real Estate), HVCRE (High Volatility Commercial Real Estate). These sub-classes also identify the type of risks of the borrower: For example Project Finance is much more risky than an IPRE. Indeed, Project Finance is a way of financing large-scale and long term capital investment such as complex installation. The return on investment and the cash flow for such projects are not sure. Bank’s repayment is only based on cash flow generated by the project so it’s risky. A well known Project Finance is the Channel Tunnel. IPRE has a lower risk because cash flow is generated by the property so bank’s repayment is quite sure. Banks are also allowed to distinguish the size of the company: Small and Medium sized Enterprises (SME) compared to Multinational Corporations for example. SME generally speaking will have a higher risk than multinational corporate. Indeed, the risk is diversified all over the world for big one. As risk is higher, the risk-weighted assets will also be higher for the small one.

These three types of variables are included with different weight in formulas. Depending also on which IRBA methods a bank used, these three types of variables are treated in a different way.

Two IRBA Methods:

1) With Foundation IRBA, the bank calculates its own estimate of PD. The other variables are supervisory estimates (LGD, EAD and M)

2) With Advanced IRBA, the bank calculates by itself all the necessary estimates: PD, LGD, EAD and M. They are the bank’s own estimates.

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93 Smith III (2003), p. 35.
The Advanced method is more precise than Foundation IRBA so it is the method required for a bank to perfectly manage credit risk. Given all these components and the way they are treated in several formulas, these two methods determine precisely the Minimum Capital Requirements. Compared to BASEL I it should better handle the credit risk. These methods were implemented inside banks in 2006/2007.  

The presentation of the formulae was neglected, since we are not going to question the way of calculating MCR. Therefore to show these formulae would not have added additional value to this thesis.

3.5.1.3 Operational Risk

As already mentioned in chapter two, operating risks are losses due to bank internal failures. The operating risk may be managed in BASEL II by three different sophisticated methods:

1) Basic Approach: With this approach, the bank calculates the capital for the operational risk. This will be represented by a percentage of the bank’s average annual income during the last three years.

2) Standardized Approach: In this approach, bank’s activities are divided into 8 families (Corporate finance, trading and sales, retail banking, commercial banking, payment & settlement, agency services, asset management and retail brokerage). In each of these families, the annual income is used as a proxy (a substitute). Then, the total capital for operational risk is computed on proportion of each families’ income.

3) Advanced Measurement Approach (AMA): This approach is provided by the bank’s internal measurement system. It’s possible only if the bank respect qualitative and quantitative standards. Qualitative standards are based on the necessity to keep the operational risk management function independent from other functions in the bank. In addition, this risk management has to be adapted to the day-to-day risk. The operational risk management function has also to communicate regular reports about risk to other business lines. The external auditors and authorities will check regularly the adequacy of the operational risk measurement. Quantitative standards are based on the fact that bank had to capture all the potential losses, or bad events in the measurement of operational risk. These quantitative standards will take into account expected and unexpected losses, internal and external data. The AMA approach will allow a bank to make:

- Scenario analysis: Analysis of consequences due to “high severity events”
- Business environment and international control factors: It will include in the scenario analysis other variables linked to the international business environment. This will provide more direct consequences, effects.

The AMA should be the best approach as it is the most detailed approach to determine and anticipate the operational risk. However, since these systems are bank specific, they have to be admitted by the supervisory authority.

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95 BCBC (2004b), pp. 137-140.
96 Hochradl/Reuling (2005), pp. 445-446.
3.5.1.4 Market Risk

The VaR approach allows the measurement and the anticipation of market risk.\(^{97}\) It determines the overall investment portfolio’s percentage of loss (shortfall probability)\(^{98}\) due to market risk. For example, a normally distributed portfolio may have a 1% shortfall probability. 

So, the first pillar provides sophisticated models to determine and anticipate the three different kinds of risks for a bank. The second pillar comes to fortify and complete the first pillar and will be discussed below.

3.5.2 The Second Pillar – The Control Process of Banking Supervision

The second pillar deals with supervisory revision. It also give methods to deal with other risks a bank has to face such as legal, reputation and name risk. These risks are known as “residual risks”. Supervisory review helps supervisors inside a bank to determine how well they manage the risk. So supervisors will verify that the first pillar and approaches are efficiently implemented. Supervisors will work with internal auditors too\(^{99}\). Banks should have the right process to adequately measure risks and the Minimum Capital Requirements.

- Supervisors should evaluate the implementation of the regulatory capital ratios, strategies and the adequacy of capital requirement. They can take actions to improve the situation according to the respective risks.
- Supervisors should make the bank operate above the Minimum Capital Requirement.
- The supervisor should take rapid actions, and act quickly to prevent internal failures.\(^{100}\)

They will check the implementation of the first pillar depending of the three different types of risks a bank has to face:

- Market risks or interest rate risks: Supervisors need to forecast the losses in case of interest rate’s fluctuation. They need to be careful especially when the bank’s economic value decreases by more than 20% of the capital (Tier1 capital + Tier 2 capital). Methods such as gap analysis (comparison of the asset before and after the interest rate changes), static and dynamic simulation (technical simulation to measure potential effects) improve anticipations.
- Credit risks: Supervisors and other analysts can use stress tests to check the adequacy between the Minimum Capital Requirements and an unexpected bad event. Thanks to stress tests, they check how well pillar 1 has been implemented. This method will help to identify credit risk concentration\(^{101}\) (exposure with large potential losses).
- Operational risks: Supervisors should check if the capital for operational risk is sufficient for the bank. They should compare it with the same size or type of banks.\(^{102}\)

\(^{97}\) Dempster (2002), p. 61.  
\(^{100}\) BCBS (2004b), p. 158.  
\(^{101}\) Dempster (2002), p. 77.  
\(^{102}\) Thoraval/Duchateau (2003), p. 54
3.5.3 **The Third Pillar – Extended Disclosure**

The third pillar is based on *Market discipline*. This will complete the first and the second pillar and make sure that these two pillars will be respected by providing disclosure requirements. This is a list of relevant information to anticipate and assess every type of risk inside the bank. It is like a big summary providing quantitative and qualitative information about the different kind of risks and their importance inside the bank. As this piece of information has to be published regularly, it improves bank’s transparency.

The third pillar is divided into two parts – a general and a specific part. The basic part organises the disclosure of equity, scope, and taken risks in general. The special part goes into detail in which way the disclosure has be done and handles mitigation techniques and securitisation of internal approaches as IRBA and therefore it has to be in order with the (future) reporting standards. This process will only be performed on the highest aggregation level a bank.

3.6 **Implementation of Basel II on European and National Level**

The way the model is implemented in different countries is important to know as it will influence effects and consequences. Basel II will be implemented in different degrees depending on the country and the type of bank. It also requires money and time, so this implementation may differ from one bank to another and from one country to another.

3.6.1 **The Influence of the European Union**

Basel II and its capital requirement directives have been approved by the European parliament. Basel II is applicable all over Europe. This will happen in two phases: One part of Basel II is implemented in 2006. In 2008, Basel II will be totally implemented in the European banking sector. So Basel II has already been implemented in 13 countries (belonging to the G-10) such as Belgium, France, Germany, Canada and the USA. A lot of countries (approximately 100 countries) have adopted at least Basel I and some of them have adopted partially or totally Basel II. So there are variations in the model’s implementation process.

The Capital Adequacy Directive 3 (CAD 3) represents the legal instrument for the implementation of Basel II. Since there will be differences between countries only an implementation framework is provided within CAD 3. Details of the procedures were put into the CADs’ appendix. This guarantees a higher flexibility for changes or adjustments that might be necessary, since the appendix could be adjusted more easily than the directive itself.

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103 Benink/Wihlborg (2002).
106 BCBS (2004b), pp. 177-190.
107 BCBS (2004a), p. 3.
3.6.2 Differences of the European directives to the framework of BASEL II

There were some gaps before the European parliament’s improvement. But as there is a timeline motivation to develop a common framework between the European Union and the BCBS, they managed to develop a harmonization and a common agreement about BASEL II. This is necessary to make the model efficiently applicable.¹¹⁰

However, the final EU Directive differs partly from the original draft of the BCBS that is it provides more options. Some of these distinctions will be mentioned below:

- Not only large banks, but all financial institutes should apply BASEL II.
- Covered Bonds are preferred within the rating and are traded one rating-class higher.
- Not only banks are allowed to choose their approach, but also sovereigns, and central banks at least as long as they have only some clients (Partial Use).
- Stakes (risky positions) should have lower weights (for PD, LGD), but in exchange they have to have explicit securitisation of expected losses.
- Disclosures have to be done annually, not semi-annually.

These adjustments that have been done by the European Union do not weaken BASEL II’s effectiveness, but allow an application of the model also under a bigger variety of situations.¹¹¹

3.6.3 Implementation of BASEL II on a national level

BCBS has declared that BASEL II is applicable to “all countries where operational bank operates”.¹¹² Indeed, it is important to know how BASEL II should be implemented in Home and Host countries considering a home country bank’s subsidiaries. The Basel Committee of Banking Supervision (BCBS) recognises that subsidiaries need to respect the model of BASEL II even if they are in a host country (a country outside the EU).

The BCBS give recommendations for home and host countries to improve the BASEL II implementation cooperation between them:¹¹³,¹¹⁴

- The host supervisor has to provide all necessary information about the subsidiary of a home country bank situated in its territory.
- The home country bank has to provide to the host supervisor information such as its plans to implement BASEL II, information about the BASEL II processes and deadlines.
- The home supervisor is also responsible for providing information to the host supervisor such as BASEL II’s specificities depending on the bank and the country.

The degree of implementation differs: For example in the first pillar, some banks have already adopted the “advanced approach” such as IRBA (to cover credit risk) and AMA (to cover

¹¹³ Vangel (2005), p. 73.
operational risk) and some others are on the earlier stage of the “standard approach”. This depends particularly on the way supervisors and banks cooperate in home countries and host countries.\textsuperscript{115}

The following part deals with BASEL II’s effects. After having some knowledge about them, some analysis and explanations will be performed.

### 3.7 Consequences for institutes of BASEL II

The analysis of BASEL II’s impacts will be based on Quantitative Impact Surveys and articles. Five Quantitative Impact Surveys help to analyze BASEL II (QIS 1, QIS 2, QIS 3, QIS 4 and QIS 5). However, the following part will be based only on the fifth survey because it’s the most recent, current and updated survey for the thesis. Other articles will complete this part. In addition, the QIS 5’s data has been collected by national supervisors in banks from 31 countries all over the world. So results are easier to generalize and reliable compared to the QIS 4, which focused only on three countries: Germany, USA and South Africa. The following part will analyze how well BASEL II seems to be able to reduce risks (direct impacts) and other consequences that may affect financial institutions and the economy in general (indirect impacts).

#### 3.7.1 Quantitative Impact Study 5 (QIS 5)

This survey has been published in June 2006 to analyze the most recent impacts in terms of risks. Data is based on 56 banks in group 1 and 146 banks in group 2. Group 1 and 2 represents diversified and international banks from G-10 or other countries, with a capital superior to 3 billions Euros. Population of each group are international banks from different countries (see Table A in the Appendix, p. 73).\textsuperscript{116} This survey will give a broad overview of BASEL II’s main impacts on financial institutions. At first direct impacts will be analyzed.

#### 3.7.1.1 Impacts on BASEL II MCR to Reduce Credit Risk

The Minimum Capital Requirement (MCR) covers bank’s losses if there is risk. Globally speaking the Minimum Capital Requirements decreased by 7.85% for all counterparties with BASEL II.\textsuperscript{117} A more detailed analysis can help to analyze impacts for the most relevant type of counterparties – clients of the banks.

Results in figures

Figures presented in the table 1 are a summary of results for numerous tables. This summary is the average result for banks, retails, SME (Small and medium enterprises), Sovereign (or MNE: Multinational enterprises), calculated depending on the proportion of banks in each groups, countries and approaches used by banks (Table A). This gives the weighted average. Results are presented by confronting different type of counterparties. Some of them are not presented because changes for them are small and not relevant to analyze global impacts of BASEL II. This is the case for equity. Other variables such as operational risks and market risks will be analyzed later.

\textsuperscript{115} BCBS (2003), p. 4.  
\textsuperscript{116} BCBS (2006b), p. 5.  
\textsuperscript{117} BCBS (2006b), pp. 7 and 24.
These figures show (see Table 1) that the Minimum Capital Requirement decreases for retail portfolios comprising retail residential mortgages, SME retails, Revolving and other retails.\textsuperscript{118} It also emphasizes a decrease in capital requirement for SME corporations,\textsuperscript{119} but on a lower proportion. For “sovereigns”, in other words, Multinational companies, results lay the stress on an increase in Minimum Capital Requirement. It also increases for banks, but in a lower percentage. This also depends on the type of bank. An international bank will see its capital requirement increase with BASEL II compared to the small one.

<table>
<thead>
<tr>
<th>Counterparts</th>
<th>Banks</th>
<th>Retails</th>
<th>SME</th>
<th>Sovereign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights</td>
<td>0.172</td>
<td>0.625</td>
<td>0.142</td>
<td>0.061</td>
</tr>
<tr>
<td>% change MCR</td>
<td>11.48</td>
<td>-34.90</td>
<td>-6.04</td>
<td>210.49</td>
</tr>
</tbody>
</table>

Table 1: Change in Minimum Capital Requirement (MCR) under BASEL II.\textsuperscript{120}

**Analysis of results**

A global decrease by 7.85\% of MCR has been observed (the weighted average decreases, since the main population is from Retails and SME). These results may be regarded as unexpected because the more advanced is the approach in BASEL II, the better it should assess the risk.

In addition, MCR decreased for SME and increased for MNE (or sovereigns). These results may also be perceived quite surprising as the SME should be viewed riskier than MNE.\textsuperscript{121,122} Generally speaking, SME are riskier than MNE because they have less possibility of diversification. As MNE are better diversified, they have lower risk, so they should have lower capital requirement\textsuperscript{123}. But in this situation, results are unexpected because the contrary occurs: MNE are submitted to an increase in MCR compared to a decrease in MCR for smaller companies.

**Explanation of results**

Results can be explained by BASEL II’s main objective: The main objective of BASEL II is financial stability so it tries to reduce the systematic risk (the risk affecting the overall economy and companies). Taking into consideration this fact, MNE can affect the overall stability with a higher probability than small ones (SME). MNEs can also be affected easier by systematic risk than small ones because of their overall presence all over the world. So BSBC want to assign higher capital requirements for MNE and lower one for SME. A small company’s financial instability won’t affect the overall economy. To make companies reflect the right risk’s weight in capital requirement, the BSBC have decided to develop some dispositions for SME to reduce BASEL II’ restrictions in term of loan: For example, Banks can calculate SME risk weighted assets with a lower rate of risk by applying some methods of classification and the capital required for them to cover losses will be lower. SME can also be considered as SME retail.\textsuperscript{124} Retail portfolios benefit from a lower

\textsuperscript{118} CCIP (2005), p. 2.  
\textsuperscript{120} BCBS (2006b), p. 22-24.  
\textsuperscript{121} Neville (2005), p. 44-46.  
\textsuperscript{122} Altman (2005), p. 16.  
\textsuperscript{124} Van Nguyen The (2003), p. 3.
restrictive policy in terms of Minimum Capital Requirements under BASEL II. So with this possibility of reclassification, risk decreases and capital requirement decreases, too.

Another reason may explain this fact: IRBA reduces the MCR for SME, retail, mortgage and increases MCR for banks and MNE because it’s much more precise than the standardized approach: By taking into account not only the PD (probability of default), but also other variables such as LGD (loss given default) and EGD (Exposure given default), it will calculate more adequately MCR. The standardized approach and BASEL I focus on less variables, which gives a higher “long run average” of MCR. With IRBA, by taking into account other variables, the MCR decrease for SME and entities in general. For example, according to Matthew Salisbury the MCR is lower for mortgage by using IRBA compared to the standardized approach.125

A third reason can explains this difference between entities: BASEL II has developed IRBA formulas for each type of counterparts, by taking into account the fact that a small entity will be less risky than a big entity in terms of financial stability. These formulas are much more precise: Figure 3 below displays that BASEL II and the IRB approach are positive for SME, because they are treated differently from corporations, so their MCR decrease. And the global decrease of 7.85% for all counterparties in MCR is illustrated bellow (figure 3). It could be stated that the better the credit scoring of the entity, the lower the MCR.

![Figure 3: Capital requirement under BASEL I, Standardized and IRB approaches.](image)

This graph displays a decrease in MCR for entities, better ranked than BB-, regarding BASEL I and BASEL II. Indeed, complex formulas under BASEL II calculate more appropriately the MCR.

However IRBA is a complex approach.127 Sovereigns are easily submitted to the advanced approach of BASEL II (IRBA). Indeed, they are able to provide more financial data about them (historical data about the Probability of Default128 for five years, for example). This easy access to

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data helps banks to use the advanced and foundation IRBA that require a huge amount of information about companies in order to calculate their capital requirement\(^{129}\). A young company or SME does not have this financial historical background, so the analyst can have some difficulties to calculate capital requirement using IRBA\(^{130}\). These reasons explain why through BASEL II, the analyst may still use the standardized approach for SME and why the analyst uses IRBA more easily for MNE. When a bank will use more easily IRBA for some counterparties such as retail, SME, mortgage, it should comfort this positive trend in term of MCR.\(^{131}\)

### 3.7.1.2 Impacts on BASEL II MCR Approaches to Reduce Operational Risk

<table>
<thead>
<tr>
<th>Approaches &amp; Participants</th>
<th>Banks from G-10</th>
<th>European non G-10 banks</th>
<th>Other non G-10 banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard approach</td>
<td>7.07</td>
<td>7.23</td>
<td>4.86</td>
</tr>
<tr>
<td>IRBA</td>
<td>7.20</td>
<td>5.54</td>
<td>4.47</td>
</tr>
</tbody>
</table>

Table 2: % change in MCR due to operational risk.\(^{132}\)

Obviously, operational risk will have a increasing impact on the Minimum Capital Requirement: It increases MCR (Table 2). This is logical. BASEL II has included operational risk to calculate the MCR. It was not included under BASEL I (BASEL I was based only on credit risk), so this will increase the amount of capital requirement as capital requirement need to be higher to cover additional losses (operational losses). But even if the result is positive for banks from different countries, there is a spread: From 4.86% to 7.23% for the standard approach and from 4.47% to 7.20% for IRBA (foundation + advanced IRBA). This is due to the business profile of each bank. Banks that are more financial service oriented (opposed to lending) will have a higher operation risk. Banks that are lending oriented will have a higher credit risk.\(^{133}\)

### 3.7.1.3 Impacts on BASEL II’s MCR Approaches to Reduce Market Risk

MCR is not affected by market risk under BASEL II. Market risk will be anticipated by bank with VaR method and stress testing\(^{134}\) provided by BASEL II. But globally speaking, banks have not included the market risk by using variables such as Alpha in the approach to calculate capital requirement.\(^{135}\) Alpha may reduce the MCR by taking into account the double default effect (Alpha may reduce the risks by avoiding to take into account both client and collateral’s risk). But BASEL II will not have any impact on capital requirement for the market risks.

The following parts will now deal with BASEL II’s indirect effects. The main indirect effect is based on costs and resources.

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\(^{129}\) CCIP (2005), p. 2.


\(^{131}\) Vangel (2005), p. 73.


\(^{133}\) Van Nguyen The (2003), p. 4.

\(^{134}\) BCBS (2005), p. 42.

\(^{135}\) BCBS (2006b), p. 36.
3.7.2 REQUIREMENTS TO COSTS AND RESOURCES

BASEL II implementation will take a lot of time, cost and resources.\textsuperscript{136} Within the European Union these expenses are estimated to add up to 20-30 billion Euros. Big banks have to expect 80-150 million Euros each. For example, the second pillar of BASEL II focuses on the improvement of bank’s supervision for risks. Man-hours, training, and recruitments to improve bank’s supervision are required to implement the second pillar (also with regard to the adjustments with IAS/IFRS).\textsuperscript{137} As it is expensive, it will be easier for large banks to implement BASEL II and especially IRBA than smaller and regional banks.\textsuperscript{138} But due to higher flexibility in the retail markets no real disadvantage will appear for small banks.\textsuperscript{139}

These trends may also be observed between banks from developed and developing countries: In the table 3, it’s obvious that the proportion of banks using advanced IRBA is lower in European non G-10 countries and other non-G-10 countries. For example, Banks from G-10 (developed countries) use 5.6 times the advanced IRBA compared to banks from non G-10 (developed and developing countries). As Foundation and Advanced IRBA are sophisticated and costly, it may appear in general more difficult to develop these approaches in banks from developing countries.\textsuperscript{140}

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Standard approach</th>
<th>Foundation IRBA</th>
<th>Advanced IRBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-10 banks</td>
<td>102.27</td>
<td>89.98</td>
<td>25.86</td>
</tr>
<tr>
<td>Non G-10 banks</td>
<td>100.34</td>
<td>13.44</td>
<td>4.55</td>
</tr>
</tbody>
</table>

Table 3: Number of banks participant for each BASEL II approach, summary.\textsuperscript{141}

*As a bank may use many approaches, the sum of banks providing data for each approach may be superior to the number of banks itself (146 and 56 banks in group 1 and 2).

These data have been collected in 2005 and published in 2006. Even if the QIS 5 is not the most recent study, the trend should be the same nowadays, but the reader can expect that generally speaking banks have improved the BASEL II’s implementation and use more the advance IRBA in 2007 compared to 2005. So the spread between local, international banks, banks for developed and developing countries may decrease.

3.7.3 IMPACTS ON CREDIT PRICING

In general one can say that new equity rules will lead to new prices. In which direction the prices will develop and what the major and minor impacts will be is stated in this chapter.

3.7.3.1 MAIN IMPACT ON CREDIT PRICING

The impacts of BASEL II depend on the size of the counterpart.\textsuperscript{142} As it was explained in the previous part, the MCR is higher for sovereigns, banks and lower for SME. So credit pricing is higher for banks and Sovereigns compared to SME. In this situation, the access to a loan should be

\textsuperscript{136} Milligan (2004).
\textsuperscript{137} PWC (2004).
\textsuperscript{138} Lauren Bielski (Dec. 2004), p. 12.
\textsuperscript{141} BCBS (2006b), pp. 16 and 24.
easier than before for an SME\textsuperscript{143} and small entities. Banks in the coming years will easily manage to submit SME and retails to IRBA, so this trend should continue in the coming years.\textsuperscript{144} Indeed, BASEL II and more precisely IRBA focus on much more variables such as the probability of default.\textsuperscript{145} So, on the one hand, the impact in the QIS 5 shows that costs of credit are lower for SME and retails, and on the other hand, this trend should be confirmed in the coming years because banks will manage IRBA more easily.\textsuperscript{146} Another reason is the increase in competition in the banking sector. A small decrease in credit prices may be expected.\textsuperscript{147}

### 3.7.3.2 Other impacts linked to credit pricing

**Economic impact:** A lower MCR for retail improve the access to credit. On a global level, it will increase the debt per persons. Some trends illustrate the fact that the level of debt increase in term of residential mortgage retail’s credit, credit revolving and other credit. In France for example, due to residential mortgage retail’s cheaper credit demand has increased by 8% each year, since 1995. Growth for credit revolving remained stable even if there were an economic recession. In this situation, people maybe easily indebted, like in the USA where it’s quite common.\textsuperscript{148} This trend should continue in the future.

**Margin for banks may change:** As the cost of credit is a little bit higher for sovereign, MNE and banks (Banks’ clients), banks’ margin may also be higher. But this is not the case for SME now as SME’s MCR decreases. This trend should be the contrary for small entities.

Business cycles are connected to the credit risk\textsuperscript{149}. BASEL II provides methods that determines capital requirement with more adequacy than BASEL I, depending on the financial situation of the company (such as its probability of default). So during a period of recession, banks may lead a more restrictive policy in term of credit under BASEL II. This will be a vicious circle because the global economy can suffer. It will create a *cyclical effect* by increasing business cycles’ volatility\textsuperscript{150}. But this affect is not justified because a bank will analyze each case with details and different variables (IRBA), without taking only into account the global economic factor. This is also not justified as a bank has some financial margins to smooth out the effect of economic shocks. These margins have been prepared by banks due to financial rules and regulations such as BASEL II.\textsuperscript{151}

### 3.7.4 Impacts on competition

#### 3.7.4.1 Competition between banks in terms of price and demand

Generally speaking the fact that access to loans is easier for SME than MNE (3.7.1 Impact study QIS 5) will have indirect impacts on the type of banks. Indeed, banks that are more SME or retail mortgage residential oriented have less Minimum Capital Requirements, and less BASEL II restrictions. So the price is lower and demand higher. This is different to banks that are more MNE or

\textsuperscript{143} Van Nguyen The (2003), p. 3-4.
\textsuperscript{144} Dietsch/Tisseyre (2005), pp. 50-52.
\textsuperscript{145} Altman (2005), p. 33.
\textsuperscript{146} CCIP (2005), p. 2.
\textsuperscript{147} PWC (2004), p. 4.
\textsuperscript{148} Van Nguyen The (2003), p. 5.
\textsuperscript{149} Mark/Graydon (2005), p. 161.
\textsuperscript{150} Kashyap/Stein (2004), p. 3.
\textsuperscript{151} Sigrist (2004), p. 7.
globally oriented and may suffer by having higher capital requirements for their clients. So access and price of credit have been improved for SME and retail oriented bank and they may be more competitive than the other banks (banks that provide loans for big companies). This difference in terms of competition should be maintained if IRBA is better managed for SME in the future.

### 3.7.4.2 Competition between Banks in Terms of Profitability

Large and well diversified banks have more resources to develop the IRBA approach. The IRBA approach increases the MCR and the cost of credit for MNE and banks. As the cost of credit increases, the profit margin increases too. But the contrary occurs too: As MCR decreases for SME, retails and mortgage, the profitability can decrease too. This is a competitive advantage in term of profitability and type of banks. So if the bank is oriented towards “MNE”, it will have a higher profitability and if the bank is oriented towards “SME”, its profitability will decrease.

### 3.7.4.3 Competition in Term of Credit Rating, Credibility and Reputation

A large and well diversified bank that uses IRBA compared to a small bank that uses the basic approach will gain in term of reputation. As IRBA is a more reliable approach, the bank will improve its credibility and its credit scoring too. If its credit scoring is A+ for example, it will attract more investors. So, it seems to be quite positive to use IRBA and implement BASEL II in this case. It will also attract low risky clients compared to banks that don’t use IRBA.

### 3.7.5 Impacts of BASEL II, Influenced by IAS/IFRS

IAS/IFRS (International accounting standards/ International Financial Reporting Standards) has been developed by the International Accounting Standards Board (IASB) in London to make sure that the banks and companies’ financial statements reflect their correct value. One of the most important standards for BASEL II (and other systems that have an influence on reporting) is IAS 39, which should ensure the right or fair value of assets and liabilities every time. It lays the stress on the difference between historical and market cost. Fair value should include the current, market cost. This is the value after the financial transaction has been done because it includes the cost of the transaction too.

**BASEL II and IAS 39 have two common points**

1) The capital requirement: BASEL II provides methods to calculate the right minimum amount of capital to cover risks and losses. IAS 39 should go on this way: It tries to find the “fair value” of capital by subtracting the right losses from the revenues.

2) BASEL II third pillar: BASEL II tries to ensure Market discipline by making banks publish right information about risks and other financial aspects. This should ensure transparency, which is the same objective of IAS 39.

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154 Altman (2005), p. 34.
The major discordance

IAS 39 should provide fair value every time (not the final date of the operation) and it should also increase artificial volatility of values, so risks in general, which is not the objective of BASEL II in term of financial stability. So the BCBS and the IASB should develop coordination on this point. In 2005, they have already temped to deal with this point with 7,000 European companies quoted in London and recommend “the fair value option”, which should reduce this artificial volatility inside financial institutions. So even if, for the moment, these two projects are difficult to be implemented without discordances inside banks, it should be with coordination and harmony on the long term. So it should fortify BASEL II positive impacts in term of market discipline and transparency.

3.8 Chapter Summary – BASEL II

This chapter provides an overview of the previous chapter: the BASEL II’s development, its objectives, its structure, its approaches and its impacts and results.

As BASEL I was not efficient to manage financial risks, BASEL II has been created and passed in 2004 by the Basel Committee to ensure the financial stability of the banking sector. This model based on three pillars should be totally implemented in 2008 across 100 countries: Measurement of MCR (Minimum Capital requirement), Supervisory review and disclosure requirements are the three pillars. These three pillars are complementary as they provide approaches to manage risks in a better way: It first gives approaches to calculate the right capital requirement taking into account every international financial risk (it was not the case with BASEL I). Secondly, it manages the financial risks on the international level by making BASEL II a reality for both banks in home countries and their subsidiaries in host countries. (See figure 4 below) Thirdly, theses approaches can be implemented step by step inside banks.

Figure 4: The three pillars of BASEL II.

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161 Fédération bancaire de France (2005).
Each pillar provides different approaches. These approaches allow the banking sector to gradually manage risk all over the world, considering the bank-parent companies and subsidiaries. On the first step, a bank can use the simplest approach (Standard approach) and, it can gradually use IRBA, which is more precise: IRBA takes into account a lot of variables such as PD (Probability Of Default), LGD (Loss Given Default), EAD (Exposure At Default), M (Maturity), EL (Expected Loss) and UL (Unexpected Loss) through complex formulas. Other methods such as Stress Testing, VaR, scenarios, gaps and simulations’ analysis come to complete the three main approaches. Regular publications of financial information from banks ensure transparency and market discipline. All these approaches underline the fact that BASEL II is more complete than BASEL I to appropriately anticipate and reduce risks in the banking sector.

The degree of implementation differs depending on the type of banks and the countries. Some banks have already implemented IRBA (such as large banks or banks from developed countries) and some others banks are still in the earlier stage (such as small banks or banks from developing countries). Different impacts have been observed and analyzed: First, a higher MCR for MNE and banks, and a lower MCR for Retail, SME and small entities. This can be explained by the fact that small entities have a lower probability to influence the systematic risk and financial stability than large companies. Moreover, due to the fact that IRBA calculates the capital requirements more adequately the systematic risk will decrease. This lower MCR for small entities has improved their access to credit. IRBA is complex, but this trend in term of lower MCR for small entities should be comforted if banks manage IRBA in an easier way in the coming years. Secondly, one negative impact is the cost: The adequate capital requirement (first pillar), the use of new methods such as IRBA the improved supervision within banks (second pillar) and the improved transparency (third pillar) are costly. All these requirements are time consuming. They also increase competition and discrepancy between small regional and large international banks.

In addition, BASEL II will have indirect effects on competition for the banking sector, based on profitability, credit price, credit rating and reputation. Large and well established banks will easily implement the IRBA and have a better reputation than the others. Some other potential impacts on the overall economy maybe the cyclical effect based on the fact that BASEL II can increase business cycles. But this effect should not be as important as the analyst takes into consideration each individual case and not only the overall economy. In addition, as BASEL II improves access to credit for small entities and people in general, it can also increase the level of debt. Some European countries may have the same profile than the USA in the future considering the amount of debts. This increase in debt will also increase demand and price for residential mortgage retails and other investments. And last, discordance has been observed between BASEL II and other regulations such IAS/IFRS. If IAS/IFRS and BASEL II are consistent on the long-run, the IAS/IFRS should support BASEL II’s objectives in term of market discipline and transparency.

*The next chapter is going to present SOLVENCY II, which allows then, to compare BASEL II’s and SOLVENCY II’s objectives, constitution and impacts.*
4 SOLVENCY II – A MODEL OF SUPERVISION FOR THE INSURANCE INDUSTRY

The following chapter deals with the second model that will be examined in this thesis. First of all an overview about the previous situation within the insurance supervision systems will be presented. This presentation will take into account the international financial risks mentioned in chapter two. Afterwards a brief overview about the development of the SOLVENCY II is described, starting by its origin SOLVENCY I. Thereafter the construction and idea (three pillar model) of SOVLENCY II is outlined. Finally, an assessment of impacts on the insurance industry is presented. This chapter is required to perform the comparison with the BASEL II model.

4.1 RATIONALES OF A SUPERVISION MODEL

Considering the stability of a financial system, one has to take beside credit business also the insurance business, as already mentioned within the introductory part, into account. This becomes obvious while examining the reports to stability of financial systems of the International Monetary Fund (IMF162) and of the Deutsche Bundesbank.163 Although these reports outline that the accoutrement of equity (solvency) has stabilized and profit situations have improved, exist still enough reasons to develop and implement a supervision model.

It is a matter of fact that insurance companies are one of the biggest institutional investors on capital markets. Furthermore, according to international benchmarks they could be considered as financial institutes and as a consequence of that a discussion about stable financing and economic systems with regards to insurance companies is justified.164,165 If one believes in Goldman Sachs, a forefront American investment bank, many of the current providers of Life-Insurance in Germany will be disappeared from the market, due to a lack of investment- and risk-diversification in the coming years.166

Occurs the fact that an insurer is unable to meet its commitments to policyholders this would result in a loss of trustworthiness. This process will amplify itself and overlap to other enterprises. As a consequence the whole insurance branch could suffer from this.167

To estimate specific risks properly and to stabilize measures, qualitative supervision features are compulsory. If one takes additionally the missing equity requirements for investment risks and operational risks into account, a new supervision becomes indispensable.

4.2 THE PREVIOUS SITUATION FOR THE INSURANCE SUPERVISION

The main elements of current insurance supervision in Europe are the Directives 73/239/CEE and 88/357/CEE, which correspond to the Non-Life Assurance Directive from 1973 and can be considered as the first generation of solvency guidelines. Furthermore, the second generation, the Directives 79/267/CEE and 90/619/CEE168 that are the Life Assurance Directives from 1979 came

163 Knauth (2005), pp. 3-34.
164 Knauth (2005), 3-34.
The third generation of directives is represented by the Non-Life Assurance Directive 92/49/CEE and the Life Assurance Directive 92/96/CEE. Those were established in 1992 and formed the foundation of the European domestic insurance market. The essential improvements within these guidelines were the omitted preventive product control and the implementation of the principle of the member state of the head office, including mutual acceptance of harmonizing supervision rules as well as the creation of a sufficient solvency margin.

In 1998 the Insurance Group Directive was adopted. Main elements of this directive were the calculation of the adjusted solvency of insurance groups. This should confirm the available equity as an actual state on the one hand and the determination of a target solvency as minimum of verifying equity on the other hand. In this way double gearing can be avoided. This directive was in most European countries established in 2001.

### 4.3 SOLVENCY I

After the implementation of the European Single Market it became obvious that there has to be a rearrangement of the supervisory regulations. The first step was made in 1994 with formation of the Müller-Commission. This committee consists of representatives of several European supervisory authorities. Its task was a critical review of the previous situation within the insurance market and to compile realignments. In 1997, their first report including recommendations to enhance the European solvency supervision was submitted. According to this statement the supervision model worked quite well and only slight changes and extensions were necessary. The recommendations of the Müller-Commission were passed through two EU-directives, in 2002. Their implementation began in 2004.

Consequences of the realignment were stricter requirements in order to ensure solvency. Now, according to the regulations solvency has to be guaranteed at every single point in time and not only at the end of the fiscal year. Resultant from this, insurance companies were forced to improve their information systems to provide reliable data on a daily basis.

From now on, a solvability margin was required to cover unexpected losses and future risks. The available solvency consists of free and unmortgaged equity without intangible assets. This is the basic capital, compulsory and free reserves and the retained earnings or debit carryover after deduction of distributed dividends. Moreover the supervision was enabled to intervene earlier in the case of non-sufficient reserves or breach of solvency norms. That is for example: The supervisory authority could limit rights of disposal of assets or claim for a recapitalisation plan. Furthermore, it has the right to get access to reinsurance contracts for particular solvency calculations and to reject them due to highly worsen quality or missing risk transfer.

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175 World Bank (2005), p. 130.
177 European Union (2002b).
To calculate the actual solvency within equity, several changes for Non-Life and Life-Insurance companies\textsuperscript{178}, were established:

- As before, valuation reserves can be assigned to equity on application, but now there is also the possibility to assign them to guaranty funds.
- Only on application 50\% of the not deposited basic capital could be deducted from the actual solvency amount and therewith lower the amount insurances have to provide, as long as 25\% are deposited. The maximum deduction equals 50\% of the solvency margin. Now, this border is also valid for lower-ranked liabilities.\textsuperscript{179}

\subsection*{4.3.1 Changes for Non-Life-Insurance Companies}

The EU-Directive 2002/13/CE from 5\textsuperscript{th} of mars 2002, which changes the Directive 73/239/CEE, has several impacts on Non-Life insurer. The minimum contribution to the guaranty fund was increased to three million Euros per year. For future purposes this contribution will be oriented on the development of the European consumer price index, to avoid jumping increases. As long as the insurer has no third party liability business this contribution equals two million Euro per year.\textsuperscript{180}

\subsection*{4.3.2 Changes for Life-Insurance Companies}

The minimum of the guaranty fund has to be one third of the solvency margin and at least three million Euro. It will also be oriented on the European consumer price index, as long as its percentaged change equals at least 5\%.

Until end of 2009, 50\% of future revenues will only be deducted if an actuarial mathematical certificate is presented. However, the deduction is still limited to 25\% of the required solvency margin.\textsuperscript{181}

\subsection*{4.3.3 Achievement of Objectives}

The guidelines of SOLVENCY I realised the recommendations of the Müller-Commission to adjust the supervision system. Therewith the previous predetermined objective targets were accomplished. These regulations continue to target only the liability-side of the balance sheet. So they take investment risks only in a limited manner into account. Therefore passes the European Union besides the solvency directives also investment directives concerning actuarial reserves. Those directives determine respectively how much and in which investment categories insurance companies may invest. Still, the unchanged premium-based solvency calculation methods represent the risk situation only insufficiently. The missing interconnection between assets and liabilities caused often problems due to compulsory guaranteed returns.\textsuperscript{182,183} Another weakness is the not-close-to-market valuation of assets and liabilities and the insufficient provision for interconnected risks.

\textsuperscript{178} Life and Non-Life insurance business have to be considered separately, since they face different maturities and types of insured risks. (Therefore see also chapter 4.5.1.1 footnote 200).
\textsuperscript{179} Heistermann (2004), pp. 4-6.
\textsuperscript{180} European Union (2002a), No. 4-5.
\textsuperscript{181} European Union (2002b), No. 29-30.
\textsuperscript{182} Capgemini (2004), p. 10.
\textsuperscript{183} Kidwell/Blackwell/Whidbee/Peterson (2006), p. 552.
The essential problem of an inadequate orientation at the minimum capital settings on the actual risk of the insurer was not corrected by the new rules. Considering these facts the new rules did not satisfy the complexity and prerequisites of the insurance business.

Reckoning the strong alteration within the insurance branch, like the developments at the capital markets, new investment instruments as well as tightened competition makes a revision of this model feasible.

### 4.4 The Development of Solvency II

#### 4.4.1 Chronicles and Idea

In 1999, the European Commission started the project Solvency II in order to renew the actual insurance supervision and to harmonize it with the banking system within the EU member states.\(^{184}\)

This project should be realised in two big phases and should find its completion due to an EU-directive that is valid for all member states. There might be the question, if this model will be accomplished also on a global level, since European guidelines are not naturally accepted without discussion. However, for new Solvency II is planned only as an European model.

The new system should provide supervision authorities with appropriate qualitative and quantitative tools to assess and regulate the overall/total solvency of an insurance company. Furthermore, it should offer incentives to record and minimize risks. An efficient control belongs also to the target settings as the creation of equal/fair competition conditions.\(^{185}\)

All relevant types of risk should be regarded and a possibility to use internal risk management systems will be provided. Sufficient equity capital as protection of Solvency I’s preferential. Other aims are the protection of the insurance company, the avoidance of exorbitant complexity, the allowance of market developments, the definition of principles (without going too far into detail), and the prevention of overcapitalisation.\(^{186}\)

The European Commission involved different international organisations and associations like the IAIS (International Association of Insurance Supervisors), the IAA (International Actuarial Association), the auditing company KPMG, and the national supervision authorities to develop Solvency II in a proper and professional way. Due to this consortium, representatives of supervision authorities out of over 170 countries participate in this development process.\(^{187}\)

As mentioned before the project Solvency II consists of two major phases. These phases will be considered in detail in the following subchapters.

#### 4.4.2 Phase I – Construction of the General Conditions

The first phase includes an analysis of the existing situation, a discussion about possible basics, principles and concepts as well as the commitment of the main features of the future system. Phase I was started in May 2001 and was completed with the document of the EU Commission:

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“SOLVENCY II – Reflections on the general outline of a framework directive and mandates for further technical work”, on 19th September 2003.\textsuperscript{188}

Constitutive upon the Sharma report, the following aspects were central for the implementation of Phase I:

- Evaluation of the overall solvability of the insurance company.
- A 3-pillar structure – similar to BASEL II – that should provide an understanding of risk, based on the overall solvability.
- A two-step differentiation of equity requirements distinguishes between the economic capital (later on called Solvency Capital Requirements (SCR)), and the Minimum Capital Requirements (MCR). The MCR is arranged below SCR.
- A risk-based standard approach is given. Additionally, internal models to detect the equity requirements are admitted.\textsuperscript{189}

After knowing how the fundamental characteristics of the model shall look like, a specification of the drafted general conditions was performed within Phase II.

4.4.3 PHASE 2 – DESIGN AND IMPLEMENTATION

The European Commission used four workgroups of the Committee of European Insurance and Occupational Pensions Supervisors (form now on stated as CEIOPS) to develop the technical details and implementation rules. They started their work in summer 2004. These four groups work on one of the following subjects, respectively:

- Life/Non-Life insurance (Pillar I)
- Qualitative financial supervision (Pillar II)
- Market transparency (Pillar III)
- Sector overlapping questions

The proposals of the four workgroups are collected through the subcommittee “Solvency” of the European Commission and then presented to the European Parliament for decision making.

The European Commission intends, according to the revised time schedule (MARKT/2502/05), to give a draft of a directive in June 2007. This corresponds to an adjournment of nine months. The commission is willing to use the additional time to consolidate the directives of Life, Non-Life and Group insurance and to investigate the impacts of the new rules through Quantitative Impact Studies (QIS). The work of the CEIOPS-groups and the whole legislative procedure on European level shall be finished until end of 2008. According to the time schedule, the implementation shall be carried out until 2010.\textsuperscript{190}

A compact overview about SOLVENCY II’s timetable is shown in Figure A in the Appendix (p. 73.)

A close relationship exists between the developments of SOLVENCY II and the IASB, which is developing a new standard for the reporting procedure of technical provisions. This should be

\textsuperscript{189} Sharma (2002), pp. 70-75.
\textsuperscript{190} Winter (2005), pp. 15-17.
performed simultaneously to keep the effort for companies manageable. The basic will be a market oriented consideration of assets and liabilities.  

The following parts of this work will now present the construction of SOLVENCY II in detail. For this purpose the three central pillars will be examined. As in chapter three, a figure is presented later on (figure 6) in the summary chapter 4.9 to visualize this structure and its main features.

4.5 THE FIRST PILLAR

The first pillar of SOLVENCY II deals with the regulatory concerning the financial resources. Those are supervisory specifications with respect to technical provisions, investments and solvency margins. Since SOLVENCY II wants to keep the probability of insurer defaulting below 0.5% within one year, certain capital restrictions/requirements are needed.

Particular important are the mentioned technical provisions. They have an extensive impact on the solvency requirements, since their calculation should be identical with the developments of the International Accounting Standards (IAS/IFRS). A detailed consideration of this point is here not possible, since there is not sufficient data available at this point in time.

The most important change according to SOVLENCY I is the market oriented evaluation of assets and liabilities. On the basis of this the equity requirements of Pillar I will be calculated. It will be distinguished between Minimum Capital Requirements (MCR) and Solvency Capital Requirements (SCR). SCR could also be constituted as aimed economic capital.

MCR defines that amount of capital on their shortfall the activities of an insurance company would have an unacceptably high risk for the insuree. If the capital of the company falls below the MCR ultimate supervisory actions shall be initiated. The MCR should be considered as a simple, robust and objective indicator.

SCR should warrant a capitalisation that gives an insurance company the opportunity to absorb huge unexpected losses to provide the insuree an appropriate security that payments will be made if necessary. The SCR should represent that amount of capital, which is needed to fulfil all obligations within a certain time horizon to a particular confidence level.

A catalogue of different possible actions is available to the supervisory authority in case of a shortfall of the optimum level. These actions could be used before a definite intervention becomes necessary.

The calculation of the capital requirements could be performed either on basis of a standard model or through an internal approach, which has been developed by the company itself and has been investigated and permitted by the supervision authority. In this way it is guaranteed that also small firms can develop a risk management within their possibilities.

The standard approach should be a holistic method that contains all basic risk for both assets and liabilities.

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191 Schubert (2005), pp. 35-38.
194 CEIOPS (2005), p. 70.
In August 2006, CEIOPS presented a preliminary draft of the European Standard Approach (ESA) within its “technical specifications” of the 2nd Quantitative Impact Study (QIS 2). This approach was tested in the QIS 2 and that is why it will be presented here more in detail, since we are going to take a closer look at the QIS 2 later on.

4.5.1 THE EUROPEAN STANDARD APPROACH (ESA) BY CEIOPS

This part of this chapter will focus on the Standard Approach for the calculation of the Solvency Capital Requirements (SCR) and Minimum Capital Requirements (MCR) under SOLVENCY II. The basic idea of these requirements are visualized in figure 7 in the summary chapter 4.9 that should help the reader to better understand these two capital levels. This paper contains not the final official version of the approach. The final changes and adjustments could first be made after the analysis of QIS2 and QIS3. Since this will not be done before October 2007 we use the status of this paper as a basis for the description and presentation of the approach. There are also other attempts to create a Standard Approach, e.g. by the BaFin in Germany, or by the SwissRe in Switzerland, and by the CEA.\footnote{Zimmermann/Borowski (2006), p. 1229.}\footnote{Eling/Schmeiser/Schmit (2007), p. 73.} However, due to the fact that the QIS’ focus on CEIOPS’ Standard Approach, this approach will be discussed in this thesis.

4.5.1.1 DETERMINATION OF SOLVENCY CAPITAL REQUIREMENT (SCR)

The approach of CEIOPS covers both the Life and the Non-Life insurance business and takes their sector specific characteristics into account. The mixtures of these two classes have not been investigated so much, but a team of CEIOPS is working on this part. For that reason only the framework for the Life and the Non-Life insurance will be discussed here. The basic idea of both frameworks is the same but there are still slight differences between them.

CEIOPS wants to provide one single framework that covers all main risk types. The ESA should enable companies to measure and calculate their SCR in a simple and correct way.\footnote{One reason is that also small firms with limited resources or firms with mostly immaterial resources are able to apply this approach.} One of the basic ideas of this approach is to use a simple standardised factor based approach to estimate and evaluate each risk component separately. For that purpose the ESA is constructed as a “k-factor” model. Especially for market risk and underwriting risk, the ESA gives companies the opportunity to use some alternative options and scenarios to better constitute their individual incidents and thus to calculate their SCR more correctly. The used scenarios should be consistent with the design of the standard factors.\footnote{CEIOPS (2006d), pp. 2-5.}

Furthermore, the ESA is going to calculate the capital requirements for each the main risk types: Market risk, underwriting risk (Life, Non-Life, and Health), credit risk, operational risk, and all their respective sub-categories of risks.\footnote{For the Market Risk these sub-risks are namely according their importance: Equity risk, Interest Rate risk, Real Estate risk, Currency risk, and Credit Spread risk. For the Underwriting Risk these sub-risks are namely according their importance: Biometric risks (Mortality risk, Longevity risk, Morbidity risk, and Disability risk), Lapse risk, and Expense risk within the Life insurance.} Out of all these sub-SCRs the total SCR can be derived. This process could be illustrated as shown in figure 5 below.

\footnote{CEIOPS (2006d), pp. 2-5.}
The parameters to determine MCR and SCR a risk measure and a confidence interval is used. The target risk measure should be the Tail-Value-at-Risk or Value-at-Risk at a level of 99% or 99.5%, respectively. The time horizon should be one year. The expected shortfall would than equal 0.5%.^202

![Figure 5: Overview about the risks included in ESA (Source: CEIOPS (2006), p. 16)](image)

The basic formula to calculate SCR is: **SCR=BSCR – RPS – NL_PL**. BSCR describes the “Basic Solvency Capital Requirement”, RPS describes the “Reduction of Profit Sharing” and NL_PL states the “expected profit or loss arising from next years business for Non-Life insurance”. This formula will be examined more detailed below.

One fundamental underlying economic principle has to be mentioned before presenting how the SCR is calculated within ESA. This principle concerns the used input-data for the calculations. Since the Capital Requirements (both MCR and SCR) should be based upon the whole balance sheet, assets and liabilities have to be inserted with their Economic Value (market value). For liabilities the concept of prudence should be applied.

Since the actual accounting framework does not give economic values of liabilities, a Cost-of-Capital approach (CoC) and based on that a Market Value Margin (MVM) has been developed by CEA and was then implemented by CEIOPS in this framework to calculate the SCR of liabilities. This approach could be used by firms, which have no other possibility (like internal models) to obtain economic values for their liabilities.^203 The CoC-approach should also lighten the work for the participants of the Quantitative Impact Studies.^204

An alternative for non-hedgeable risks and liabilities – the 75th percentile-approach – gives the opportunity to calculate the appropriate risk margins by applying actuarial stochastic simulation methods to determine the difference between expected value and the needed value to obtain an overall level of confidence – the risk margin.

Another basic principle of ESA should be that it takes risk mitigation through reinsurance and other mitigation tools (like different hedging strategies, which limit the company’s losses in unfavourable market developments) into consideration. However, this part might be very difficult to achieve, since...
the practical simplicity of the ESA would suffer, especially when it comes to non-proportionate reinsurance. But to face also this problem, CEIOPS refers to the use of scenario approaches.\textsuperscript{205}

\textit{Elements of the Standard SCR Formula: }\textit{SCR=\text{BSCR-RPS-NL}_{PL}}\text{PS}

To obtain the total SCR the risk absorbing ability of a company’s future profit sharing (RPS) has to be considered by the ESA. This is relevant for the Life-Insurance industry. Non-Life Insurance companies more often use another risk absorbing area: the expected value of newly started businesses (NL\_PL). For that purpose the ESA has to differentiate among different categories of liabilities. In general such an absorbing ability will reduce the SCR. If a firm does not know, if it could absorb some risk they are allowed to use a low standardised deduction.\textsuperscript{206} Moreover, ESA aims to take fund structures of companies into account, while determining the capital requirements. This is necessary, since the fund structure e.g. allows or does not allow profit sharing and/or risk sharing among policyholders. These circumstances affect the risk absorbing ability of the fund and are therefore substantial to consider.\textsuperscript{207}

The central element of the formula is the “Basic Solvency Capital Requirement” (BSCR) that is before any adjustments according to RPS or NL\_PL. The BSCR is the aggregated result of the SCR for each main risk class market risk, credit risk, underwriting risk and health risk; and its respective sub-risks. The underlying ideas for computing each main risk’s SCR are presented in the following paragraphs.

\textit{Since the formulae in this approach are not so deeply finalized, we are not going to calculate or to investigate these formulae more in detail.}\textsuperscript{208}

\textit{SCR for Market Risk}

For calculating the SCR of the market risk, ESA suggests to group assets into classes with homogenous risk features, like volatility or credit quality of underlying assets. This particular part of the total SCR should also respect the situation where more than one event could have a combined impact. Therefore the so called \textit{mass lapse risk} has to be considered. The stated approach includes a lot of formulae and suggestions for tests (mostly correlations matrices tests) for each of the sub-market-risks.\textsuperscript{209}

\textit{SCR for Credit Risk}

For the credit risk part, especially the credit quality of the counterparties has to be taken into observation and into the computation of the Solvency Capital Requirements. The credit risk for an insurer becomes obvious and critically necessary to observe when it comes to a probable default of one of its reinsurers’, since its own profitability and paying ability would suffer drastically. Also the mortgaged credit risk should be considered.\textsuperscript{210}

\begin{footnotesize}
\textsuperscript{205} CEIOPS (2006e), pp. 16-17.
\textsuperscript{206} CEIOPS (2006e), pp. 18-22.
\textsuperscript{207} CEIOPS (2006e), p. 19.
\textsuperscript{208} The formulae are based on complex correlation matrices and expected value calculations for each specific type of risk (see p. 39, footnote 197).
\textsuperscript{210} CEIOPS (2006e), pp. 32-33.
\end{footnotesize}
**SCR for Underwriting Risk (Life, Non-Life, and Health)**

Within the detection of the SCR of the underwriting risk part, the CEIOPS submitted different volume measures for the respective sub-risk-types. To deal with the risk mitigation the ESA sees only reinsurance as the working tool.\(^{211}\) This is true, since reinsurance offers a high flexibility and adaptability, due to its nearly endless variety of contracts, especially for the Non-Life business. However, as stated before most of the non-proportionate contracts of reinsurance are not yet covered by the ESA, at this point in time. The formulae and test proposals for this part made in the ESA are only slightly different for both the Life and Non-Life insurance industry.\(^{212}\)

The calculation of the SCR for the Health sector is related to that of the Life sector. This is due to the fact that some data is not differentiable. A risk reducing matter for this particular risk lies within the premium adjustment and calculations basics. Are these parts flexible and possible to monitor quickly they could have mitigating effects.\(^ {213}\)

**SCR for Operational Risk**

The final risk that affects the constitution of the overall SCR is the operational risk. According to the ESA the calculation should be performed on the company’s level for Life insurance companies by using volume based measures on technical provisions and premiums. Non-Life companies should use a Non-Life level, which is represented by reserve and premiums, to calculate their SCR in this part.\(^{214}\)

**Aggregation to BSCR**

After determining all these sub-SCRs the different results are aggregated to the total BSCR. This should be done in a way that captures diversification effects as well as concentration effects. To reach this goal this approach counsels the use of correlation matrices, to create more transparency across and within the different risk types.\(^{215,216}\)

*After having gathered all components, SCR can be determined by the stated formula. The second part of the approach deals with the MCR and is presented in the following part.*

### 4.5.1.2 The Minimum Capital Requirement (MCR)

The MCR serves as the ultimate capital barrier, which should never be undershot. The gap between SCR and MCR provides space for intervention by the supervision authority to restructure or sale a part of the insurance in order to recover or simply to protect the insurees. CEIOPS wants to have the MCR as a percentage of the SCR. If this post-transitioned MCR will be consistently determined to SCR, the same data and methods can be used. Therefore occurs no further effort for the companies.\(^ {217,218}\)

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\(^{211}\) CEIOPS (2006e), p. 53.

\(^{212}\) CEIOPS (2006e), pp. 34-45. (Life) and pp. 49-57 (Non-Life).


\(^{214}\) CEIOPS (2006e), pp. 57-58.

\(^{215}\) This is due to the fact, since these some sub-risks have to some extend absolute different characteristics (e.g. catastrophe risk vs. premium risk).

\(^{216}\) CEIOPS (2006e), pp. 16-18.


Another opportunity presented in the approach is the transitional MCR. This corresponds to that one of SOLVENCY I, with some adjustments according to SOLVENCY II’s methodology. However, this entry is much more complex than the transitioned MCR and is not in favor of CEIOPS.\footnote{CEIOPS (2006e), pp. 60-62.}

*The first pillar contains the basic calculation principles of SOLVENCY II. The subsequent chapters will present pillars two and three, which will contribute to Pillar I by providing further tools of supervision and control to assure a consistent and proper perception of the company’s situation.*

### 4.6 The Second Pillar

The second pillar is constituted on the mentioned Sharma report for further qualitative elements of supervision. Among this belong the principles of internal control, proper risk management, and the formulation of combined principles and instruments of supervisory control.\footnote{Eling/Schmeiser/Schmit (2007), p. 72.}

The commission intends to develop a supervisory controlling procedure that is based on the actual directives and the fundamentals of BASEL II. For insurance companies this would lead to a methodically administration, an appropriate internal control, and an obligation of disclosure to supervision authorities. On side of the authorities these rules bring along minimum competences to inquire, rights to intervene and specific operation barriers.\footnote{European Commission (2002e), No. 224-289.}

According to the principles of BASEL insurance companies have to have a measure to assess their equity configuration in relation to their specific risk profile, as well as a strategy to maintain their equity.

The supervisory authorities have to evaluate the quality of the internal assessment tools and the strategies to maintain equity, as well as the ability of the insurer to keep the predetermined minimum coefficients.\footnote{CEIOPS (2006a), pp. 9- 10} Furthermore, they have to be able to claim higher equity configurations for a company or a national market, if necessary, and they have to go after a precocious intervention to avoid non-sufficient equity configurations.

Additionally to the actual regulation for banks, also definitions about the amount of accruals and investment management have to be included.\footnote{European Commission (2002e), No. 225.} Also clear regulations about risk evaluation methods and intervention rights with regard to target capital configuration are relevant. Also the harmonisation of European statutory provisions plays a role. For that purpose a certain degree of analogy in interpretation and procedures of supervision authorities is needed. This becomes especially obvious while considering international insurance companies with subsidiaries that are controlled by a supervision authority.\footnote{CEIOPS (2006c), p. 10.}

*Based on the Sharma report the European commission formulated some articles and their systematic, which have to be achieved in order to make the new system working as good as possible. These articles will be presented in the following subchapters.*
4.6.1 Internal Control and Administration

The existing guidelines of proper administration and appropriate internal control procedures should be described more in detail. That means that values and standards as well as the predefinitions of objectives have to be formulated and announced to all employees. Moreover a clear hierarchical structure and distribution of competences has to take place and the management has to be responsible for the implementation of an effective control system.\(^{226}\)

The engaged working group, the Madrid Group, of the European insurance supervision authority has to deal with this task, and to develop detailed principles and standards to put into the final directive.

4.6.2 Risk Management

In addition to the fundamentals of internal control and administration, the principles of risk management concern the specific business operations of the insurance industry. The Sharma report contains already drafts of risk management systems for the departments of corporate organisation and management, strategy and decision making, control and information as well as for investigation and remedial measurement.

The basic idea of the report aims to support risk management by implementing an appropriate corporate culture. That has already to be taken into account when it comes to corporate strategy and decision making and has to be based upon a working risk control system.\(^{227}\)

4.6.3 Underwriting Activity

Within the underwriting procedure it is aimed that insurer are only allowed to offer products, those features they could control. That is, they have to be able to cover the underwritten risks, through for example various reinsurance coverage or other compensating measures. This could be achieved by profitability tests to assure a proper guarantee disclosure. Furthermore, definitions of the underwriting strategy and its continuous control of extra volatile risks are claimed.\(^{228}\)

4.6.4 Contract-, Indemnity- and Accrual Management

This article arrogates appropriate methods to evaluate accruals (e.g. use concept of prudence). The used valuation models have to be adjusted, if new information arises.

Within the indemnity management clearly separated and predefined responsibilities as well rules for correct damage-collecting-processes and their updating has to be introduced. Moreover, it has to be assured that the gathered data is prepared by adequate statistical methods and qualified staff, who could control the applied methods. The procedures have to be documented by a consistent reporting.\(^{229}\)

4.6.5 Assets- and Financial Management

Regarding this point, the Sharma-report recommends that insurance companies should implement an investment strategy, which is coherent with their investment policy, shows an acceptable risk

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\(^{226}\) European Commission (2002e), No. 235.
\(^{227}\) European Commission (2002e), No. 237-239.
\(^{228}\) European Commission (2002e), No. 241-243.
\(^{229}\) European Commission (2002e), No. 244-247.
level and portfolio composition. Further, the investment policy should include restrictions concerning fields of business, regions, currencies and type of assets. Moreover, principles for the application of derivatives have to be formulated.

In addition to the liquidity of assets and investments in associated companies, also the correlation between assets and the risk profile of liabilities has to be taken into account.\textsuperscript{230} The strategy has to be introduced and controlled by appropriate procedures. Valuation of assets has to be oriented on the market in an objective way.

Since the relation between assets and liabilities plays a superior role within the financial management, minimum requirements for the Asset-Liability-Management should be established.\textsuperscript{231,232}

4.6.6 REINSURANCE

As already mentioned within the description of CEIOPS’s ESA, also the Sharma-report makes clear that the risk structure and liquidity of a reinsurance partner should always be observed, to be able to adjust its own underwriting policy to possible changes.\textsuperscript{233}

4.6.7 OTHER RISKS

Other risks like operational risk, judicial or commercial risks could have an impact on the numeric earnings. To restrict and efficiently control these risks the report made the suggestion “fair attitude”.\textsuperscript{234} This viewpoint should support the fair and suitable relation between insurer and insuree. This approach could also be assisted by the regulations of Pillar III.

In addition should the risk management system of the insurer be related to its risk exposure and external impacts, like natural catastrophes or economic cycle. This should enable a scenario analyses to investigate, which external effects influence the business activities of the company.\textsuperscript{235}

4.7 THE THIRD PILLAR

The third pillar of SOLVENCY II will increase the market transparency and market discipline, due to an increase within the disclosure requirements.\textsuperscript{236} The aim is to provide all market participants an insight into the solvency situation of a firm. This contributes to a corporate management that is effective and aware of risks.

The effort of the European Commission is thereby strongly orientated on the guidelines of BASEL II. This is done with respect to the fact that companies within the insurance sector do not depend on each other as much as in the banking sector.

The publication of supervisory information occurs next to the requirements of disclosure of financial markets, rating agencies and external accountants. The coordination of these information requisites is important, especially with regards to the continuous developments of the International Financial

\textsuperscript{230} CEIOPS (2006b), pp. 10-11.
\textsuperscript{231} European Commission (2002e), No. 248-252.
\textsuperscript{233} European Commission (2002e), No. 253.
\textsuperscript{234} Sharma (2002), p. 56.
\textsuperscript{235} European Commission (2002e), No. 254-259.
\textsuperscript{236} Eling/Schmeiser/Schmit (2007), p. 73.
Reporting Standards (IFRS).\textsuperscript{237} For that purpose a consultation of the IASB is needed, to reduce the administrative burden for firms.\textsuperscript{238}

A fair balance between the public interest of information on the one hand, and the interest of competition of the insurer on the other hand, will be decisive for the future disclosure rules. However, unfavourable information of an insurer could aggravate an already bad situation of a company.\textsuperscript{239}

Due to fact that the obligations of the third pillar are pretty close to the procedures and measures of Pillar I and II, their detailed definition will be done during the work on SOVLENCY II.\textsuperscript{240}

After the presentation of the constitution of SOVLENCY II we are going now to derive and outline possible and definite outcomes as well as consequences of this project. For that purpose both implications of the model itself and implications of Quantitative Impact Studies (QIS) will be used to estimate the range of the new regulations. This will be done in the following subchapters.

\subsection*{4.8 IMPACTS ON THE INSURANCE INDUSTRY}

The analysis of impacts of SOLVENCY II on the European insurance companies is here not yet finishing possible, since the framework directive will first be published in the end of 2007.

Impacts on MCR depending on the type of insurances and risks

A strong concentration on underwriting risks is obvious, although insurance companies are familiar with risks by nature. In the past led high revenues to a quite uncritical handling of the other kinds of risk.\textsuperscript{241}

Until now, the capital requirements of an insurer were mainly orientated on its business volume. However, in future each field of business would generate its own capital needs. As a consequence of this, products that bear higher risks would cause higher capital requirements. This will be taken into account within the calculation of the premiums.\textsuperscript{242} The capital requirement should increase for small insurances compared to large insurances.\textsuperscript{243} Resultant from this, smaller insurance companies may decide to buy more reinsurance cover to have less risk with high capital requirements in their own portfolio.\textsuperscript{244}

The new perquisites on the securitisation of equity capital of SOLVENCY II will introduce decisive changes within the corporate management of insurance companies. Moreover it will claim new strategies and concepts to handle risk. This is especially due to its representation of the complexity of risk, the fair value evaluation of assets and liabilities and explicit consideration of investment risk. Hence the EU attends to a step-by-step implementation of this model.\textsuperscript{245}

\begin{flushright}
\textsuperscript{237} ACAM (2006), p. 22. \\
\textsuperscript{238} Patel (2006), p. 81. \\
\textsuperscript{239} Schradin (2003), p. 55. \\
\textsuperscript{240} European Commission (2003a), No. 42-47. \\
\textsuperscript{241} Heistermann (2004) p. 4. \\
\textsuperscript{242} York (2006), p. 22. \\
\textsuperscript{243} La Société Générale (2006), p. 29. \\
\textsuperscript{244} Munich Re (2006), p. 23. \\
\textsuperscript{245} Heistermann (2004) p. 2. 
\end{flushright}
Furthermore the insurer will be affected by the stronger requirements for its risk management system. These are for example to control this system, the increased requirements of disclosure and the development and appliance of new mathematical measures to calculate the Solvency Capital Requirements (SCR). Since not only the accounting, but also the controlling and other operative sectors are affected by this realignment, a higher degree of transparency of information and cooperation will be essential.\textsuperscript{246}

\textit{Impacts on risk management: costs and time}

The impacts will affect methods, processes, internal controls, data and systems. Since the development, appliance, and integration of risk models needs a lot of time and resources. The initial use of standardized models with a following extension towards internal models seems meaningful. In the beginning, that would occur some additional costs and a higher quality of data will be needed, but this process could lead to lower capital requirements later on.

The most important changes concern the investment policy. Thereafter equity capital equipment, Asset Liability Management, re-insurance policy, underwriting activities and guidelines of damage and contract management will be relevant. A balanced portfolio for both assets and liabilities, as well as an overall approach for that, will be a decisive factor, to handle the amount of risky capital and therewith the costs of capital.\textsuperscript{247}

The impacts within Pillar II will be expressed due to frequent controls by the supervision authorities. The whole branch will be in charge to provide plans of their investment policy, asset liability management and reinsurance programs, regularly.

\textit{Impacts linked to other regulations: IAS/IFRS}

The disclosure requirements of the third pillar should be adjusted to the developments of IAS/IFRS to avoid a duplication of work within the reporting. But despite that, the expense will increase, since the standard and need of economic information and data will increase, too. Thanks to a better consistency and harmonization, IAS/IFRS should fortify SOLVENCY II’s objectives.\textsuperscript{248}

\textit{Other impacts in risk’s management: New tools to measure and control risks}

Summarising one could say that the new regulations will affect many parts of the company and only a well developed and established qualitative risk management could face these effects. All core processes in the field of product development, acquisition, asset management, inventory management, damage management, and reinsurance as well as supporting processes within corporate management, controlling, financing, reporting, personal and IT will be influenced by the changes and have to make adjustments to get along with SOLVENCY II.

In the case of the IT department that means that isolated applications will not work any longer and they have to improve their composition of the management ratios to provide them more regularly and standardized.

\textsuperscript{246} Zimmermann/Bach/Raub (2004), pp. 299-300.
\textsuperscript{247} Schubert (2005), pp. 45-52.
\textsuperscript{248} Jones/Rief/Le Pallec (2006), pp. 52-54.
The product development will have to take costs of risky capital as well as the risk-bearing capacity more into account. This will lead to new approaches within the down-streamed processes like acquisition and inventory management.

The investment policy will change and an adjustment of the actuarial practise will have to take place. So the Asset Liability Management will have to focus more on a risk aware configuration of maturity structures with regards to fulfil their obligations.

The damage management will need appreciated methods to evaluate accruals and accordant valuations.

Within the reinsurance the use of tools, which deal with the calculation of disencumbering effects concerning costs of risk capital, will have to rise.

The corporate management and the controlling will focus more on performance measurement. Commensurate structuring will take place, which will lead to profitability controls within segments and products, as far as that will be possible.

The third pillar will especially struck the financing and accounting department. That is that the amount and the level of detail of the statutory reporting requirements will increase a lot, to satisfy the new information standards.

*Impacts on the company’s overall organization*

In all mentioned sections the personnel requisitions will have to change and is going to claim appropriate training courses, demand of personal and/or external consulting.

One could also think about a certain stress of competition in a way that the companies have to concentrate on their own individual core competences. May be they have to outsource some back offices to get along with the cost pressure. It remains doubtful, if the company wants to appear as vendor of products or simply wants to be seen as a distributor. In some cases a specification for one of these two sides will be the consequence. Companies on the distribution side will act like a insurance broker that is to use products of other firms. This will increase alternative and direct distribution channels and new systems of provisions.

Furthermore, also international insurance companies will have to check their corporate structure, since there is the new huge amount of calculations and reporting for each subsidiary.

As a matter of principle, all companies, which did not consider their risks sufficiently in the past, will have to deal with this as a enormous challenge. It becomes obvious that this mechanism will have a shake-out effect for some companies.

**4.8.1 Impact Assessment Report**

Simultaneously to the processing of the quantitative impact studies the European Commission is going to create an impact assessment report. This will be an estimation of legislative consequences that examines economic results and implementation costs with regard to the achievement of objectives. The goal of this report is to show the possible impacts of the project and to allow a cost-

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benefit analysis. The complete report will be published as an appendix to the SOVLENCY II Directive and will be the basis of the discussion during its passage/adoption.\textsuperscript{251}

Additionally to the argumentation of the planned rearrangements and the respective background information the report should include an ex-ante evaluation with respect to different problems. This will be the economic implications of SOLVENCY II and the impacts on the stability of the financial markets, the influences on insurance companies and supervisory authorities as well as the impact on the products of the insurance company and the insurance markets.

The economic point of view will be focused on the European Central Bank with regard towards the future developments at the capital markets and the question of the availability of insurance coverage. CEIOPS investigates, based on the quantitative impact studies the quantitative and qualitative consequences for insurance companies. They also try to identify “winner” and “looser” of SOLVENCY II and to perform an estimation of costs for enterprises and for the supervision.

The consideration of premium and product design will be carried out by the national underwriting associations with special respect to the particularities of the individual markets.\textsuperscript{252}

\textit{Unfortunately this report was during the compilation of this work not yet available, since there were only two of the three QIS’ carried out yet. For that reason the results of the first QIS and the preliminary results of the second QIS will be presented in the following two subchapters to get at least a first impression of the direction it which SOVLENCY II will lead.}

\subsection*{4.8.2 First Quantitative Impact Study on SOLVENCY II (QIS 1)}

For the purpose of a precocious analysis of the quantitative impacts and requirements of the different European markets and insurance companies, the CEIOPS decided to perform some QIS already during the development of SOVLENCY II. Single elements of the new supervision systems shall be tested on insurance companies of different size, legal form and corporate structure, to get a detailed picture of the possible effects. 312 insurances from 19 countries participated in this study.\textsuperscript{253} The results are used within the consultation process and will be part of the already mentioned Impact Assessment Report of the commission.\textsuperscript{254}

The first QIS to SOLVENCY II focused on the “technical provisions” and was executed during the 4\textsuperscript{th} quarter of 2005. The data collection should provide insight, how far the technical and actuarial practicability of the constructed valuation rules is possible. Furthermore it wanted to get answers in which way the overall level of accruals will be affected. Since these provisions should be conform to a uniform defined security level, the detection of the expectedly future obligations as well as the calculation of safety loadings for the respective classes was part of this study.

During the survey the firms were free to choose a method to determine their safety loadings. Afterwards the results were compared to the actual level of the technical provisions.\textsuperscript{255}

Within the Life-insurance most of the participants used a stress test; build by BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht – this is the German authority for financial issues), instead of a

\begin{footnotes}
\item[253] CEIOPS (2006f), pp. 3-4.
\item[254] Eling/Schmeiser/Schmit (2007), pp. 70 and 75.
\end{footnotes}
quartile evaluation. Only two firms performed stochastically simulations, which results coverage below the premium funds according to the German GAAP. Within the Damage insurance a subcategorisation into accidental insurance, motor third party liability insurance, and third party liability insurance. Comparing to the actual German GAAP-accruals an excess coverage could be observed.\textsuperscript{256} The same is true for France, where an excess of provision could be observed.\textsuperscript{257}

### 4.8.3 SECOND QUANTITATIVE IMPACT STUDY ON SOLVENCY II (QIS 2)

This study was completed in June 2006. The analysis of the results is still in progress, but a preliminary feedback of the study was published already in October 2006. In this study data was collected from 514 insurances in 23 different countries.\textsuperscript{258} The main point of the second QIS was the focus on the construction of the framework of the Standard Approach for the calculation of the solvency capital. This should support the efforts in modelizing and calibrating the standard formula for determining the equity requirements. In the study the CEIOPS-Approach (which was described above in chapter 4.5.1) was given as a suggestion. Therefore the whole solvency capital of insurance companies, like it is aspired in SOLVENCY II, was investigated. To that belong the market appraisal of technical provisions and investments, the detection of the Solvency Capital Requirements (SCR) and the Minimum Capital Requirements (MCR), as well as the free available capital (unmortgaged funds).\textsuperscript{259}

The main results of the study were the following. Many concerns appeared about the implications of the future calibration of the Standard Approach, although the study should only concentrate on the design. However, these concerns include “the standalone factors for Non-Life premium risk and reserve risk”, “the size factors applied to Non-Life underwriting risk”, “the treatment of investment in shares”, “the correlation assumptions used to aggregate interest rate risk, equity risk and property risk [real estate risk]”, and “the factors applied for operational risk”\textsuperscript{260} and made it obvious that for the final approach a cautious and exact calibration of the Standard Approach will be essential.

Moreover, the industry favours the Cost of Capital approach (CoC approach), which was developed based on a market value margin,\textsuperscript{261} against the 75\textsuperscript{th} percentile approach, which should be perceived as a substitute for the market-consistent value, but has no sound theoretical basis. However, this preliminary feedback has to be revised, since the outcomes may have been twisted by an improper calibration of SCR in QIS 2.\textsuperscript{262}

The fondness of the companies for sufficient underlying principles became also obvious by considering the given CEIOPS’ approach for determining MCR and SCR. The mismatch of theory and idea led to a partly misunderstanding of the approach. For that reason most of the firms did not include this Standard Approach into their daily risk management processes. As a result of that

\textsuperscript{256} Winter (2005), pp. 7-9.
\textsuperscript{257} EMB France (2007).
\textsuperscript{258} CEIOPS (2006g), p. 3.
\textsuperscript{259} CEA (2006b), No. 1-31.
\textsuperscript{260} CEA (2006b), No. 7.
\textsuperscript{261} The CoC approach has a theoretical fundament that combines the provided capital respecting that risk, which cannot be secured, and the expected return. To get more information about this CoC approach see: CEA (2006c).
\textsuperscript{262} CEA (2006b), No. 9-13.
SOLVENCY II would fail its aim, which is to motivate and enable firms to handle their risks in a better way.\textsuperscript{263} A further result was that the proposals of specifications for calculating the Solvency Capital Requirements (SCR) were not suitable.\textsuperscript{264} Most of the firms found the formula to calculate the SCR too complex and in some cases it even results in a flawed estimation of the situation, e.g. where the transitional MCR was bigger than the SCR. Also here the justification of the underlying basis of MCR was unclear. As a final conclusion it can be stated that the actual post transitional MCR does not meet CEIOPS criteria of a simple, strong and objective measure.\textsuperscript{265} In addition, the use of SOLVENCY I principles for the SOLVENCY II framework was not seen in favour by the insurance industry. They think this would bring in all disadvantages of the previous system into the new model.\textsuperscript{266,267} However, according to Ernst & Young’s survey, 61\% of insurances think that SOLVENCY II will reduce risks and improve risk management.\textsuperscript{268} But they are not ready for the moment. They will be ready on the long term by managing complex internal model in a better way.

An additional conclusion of QIS 2 was that firm specific data is much more eligible to reflect the risk of standardised industry factors. Such factors are more capable for companies with limited resources. The use of the own experience for measuring the specific nature of companies’ major risk is therefore highly recommended, since it has potential significance especially for Life-insurance firms. For non-life businesses, the study identified 11 risk classes. That means a lot of more work has to be done on the classification with the intention of addressing these issues.\textsuperscript{269} The actual QIS 2 calibration study demonstrated some problems for some firms that reported a higher MCR than their SCR. The redefinition of MCR should be one of the key points of SOLVENCY II.\textsuperscript{270} To make the Standard Approach applicable across European territories it has to be flexible that is: simple with an option to use scenarios to match the needs of both companies that are not able to perform cash flow modelling (simple version) and companies that perform cash flow modelling and therefore have to take specific information and prospective views and circumstances into account (complex scenario version). In this way all firms could improve their risk measurement and management incremental according to their firms’ size.\textsuperscript{271}

To complete the studies on SOVLVENCY II a third and for the moment last Quantitative Impact Study (QIS 3) will be performed in the 2\textsuperscript{nd} quarter of 2007. Main objective of this study will be to examine and test the new rules for liability valuation, MCR and the standard formula for measuring the solvency capital.\textsuperscript{272} The study will be strongly orientated on QIS2, due to the fact that

\begin{thebibliography}{99}
\end{thebibliography}
the respondents liked the way of participating in the study and the fact that the results of QIS2 were very useful for both the insurance companies and the CEIOPS.\(^{273,274}\)

The study will be carried out until end of June 2007 and the results are expected during October 2007. Due to the fact that the results of QIS3 are not available yet, this work cannot discuss this part in more detail.

Out of the outcomes and conclusions of all three studies the Impact Assessment Report (as mentioned in chapter 4.8.1) will be created and the first SOLVENCY II Directive will be passed. The definite implementation of SOLVENCY II in Europe will start in 2009 or 2010.

4.9 CHAPTER SUMMARY – SOLVENCY II

As it became obvious in the first parts of the chapter has there always be a need of control and supervision within the insurance industry, since it is an essential part of the structure of financial markets. Moreover, a continuous improvement process took place, to adjust the regulations to the changes of companies, markets and needs. The main objective of these adjustments was to create a preventive product control system.

With the creation of the European Single Market insurance companies had to face a lot of specific risks, SOLVENCY I was a first step into the right direction. After its development in 1997 it was fully implemented in 2004. It should assure the stability of the insurance sector to meet their payment obligations against insurees. This should be derived by stricter equity requirements – the firm had to be solvent at every single point in time. To achieve this, an improvement of information systems was needed.

But due to the rapid changes on capital markets, IT, investment instruments and increasing competition, also the risk environment altered within the insurance industry and made a revision of SOLVENCY I necessary. Already parallel to the implementation of SOLVENCY I, the SOLVENCY II project was started (1999).

SOLVENCY II should cover all relevant kinds of risk and should be able to supervise and improve internal risk management systems on an international level. Further, SOLVENCY II should harmonize the insurance with the banking sector. To achieve this goal the project was divided into two phases. Phase I, the analysis of the situation was completed in 2003. From then on Phase II, to development of SOLVENCY II’s design was started.

SOLVENCY II has got the same look as BASEL II – three pillars that should interact with each other without overlapping, to create a consistent framework (see Fig. 6 below):

\(^{273}\) FJH (2007) and Carpenter (2007).
\(^{274}\) CEIOPS (2007).
The capital requirements of Pillar I (MCR and SCR) will capture and sufficiently measure all risks on the balance sheet. Within Pillar I MCR and SCR are the central elements. CEIOPS developed a Standard Approach to determine these requirements. The calculations should be based on “fair values” (market values) for assets and liabilities. However, this approach is not finalised yet and need still improvements. That is why also internal models should be developed to meet the specific needs of the company (see also Figure 7 below).

Pillar II will support Pillar I and should encourage high-quality corporate risk management. Investment strategies, predefined corporate objectives, a fitting corporate culture, profitability tests, evaluation of accruals and aligned underwriting strategies should help to achieve this goal. The framework is completed by Pillar III, which fosters market discipline and awareness of risk between stakeholders, due to increased disclosure requirements. This is done to guarantee a fair

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insight into the solvency of a company. Further these requirements have to be in order with the International Accounting Standards. However, detailed specifications have not been made yet.

The composition of SOLVENCY II implicates huge time and cost intensive changes. Management, investment and underwriting policies as well as information technology have to be adjusted and improved. The current concentration only on underwriting risk cannot exist any longer, since each kind of risk claims its own capital requirements.

To get a feeling in which way the modification of the regulations could really influence the industry two Quantitative Impact Studies have been performed. These studies investigated “technical provisions” (QIS 1) and the European Standard Approach to determine the respective capital requirements in Pillar I (QIS 2). The 3rd study will focus on “liability valuation” and further examination of the Standard Approach. The results of the first three QIS will than be used to formulate the first official SOLVENCY II-Directive.

QIS 1 provided the insight that the new regulations would lead to an increase in accruals and provisions building compared to the current rules.

QIS 2 showed that the planned regulations were not accepted by the companies and that they claim for a restructure of some elements. Further the “simple” Standard Approach turned out to be still too complicated and the use of individual factors was preferred before standardised industry factors. The Cost-of-Capital Approach was preferred against the 75th percentile approach, while calculating the value of liabilities. The transitioned MCR calculation (based on SOLVENCY I) was abandoned, since there is a threat that old problems could flow into the new system. But as an overall result of the study the majority (61%) of the insurance company share the belief that SOLVENCY II could improve the current situation of risk management by reducing risk.

This is due to the changes in the consideration of the risk situation. SOLVENCY II takes now also international risk sufficiently into account. Due to this, the companies could perform a more efficient risk management, also across borders.

*After presenting both models – BASEL II and SOLVENCY II – together with their respective impacts, a comparison of both models will follow to may be figure out potential interdependencies between both systems.*
5 Comparison of the Two Models

This will provide some future perspectives about banks and insurances under BASEL II and SOLVENCY II and allows anticipations concerning the development of SOLVENCY II. Another reason for comparing both models is to figure out, if both models really contribute to a harmonisation and synchronisation within the financial service industry. In addition to that both models are compared, because numerous banks have integrated insurance activities inside their organisation.

Although intention and background of both supervision models are conform to a large extent and the “level-playing-field”\textsuperscript{276} -principle is dominant, a closer inspection about consequences for financial service companies has to be done. Starting point for both regulators was the aimed stability of the financial system and an increased protection of customers, while contacting the financial sector.

The European Union expects further developments and back coupling between the models. For that reason the “Lamfalussy Process” was established that makes continuous adjustments and extension possible without needing a whole new legislative procedure.\textsuperscript{277}

Many points of the supervision model for the insurance industry are still unclear concerning a final design. The perquisites on risk control systems of Pillar I, the supervisory control process of Pillar II and the disclosure guidelines of Pillar III are at the moment to a large extent left open. Therefore we could only compare the fundamental contents of SOVLENCY II with the guidelines of BASEL II.

5.1 Commonalities of BASEL II and SOLVENCY II

The superior goal of synchronising the regulators to avoid objectionable transfer of risk between the branches leads to big intersections within the results by nature, since the development of SOLVENCY II is strongly orientated on BASEL II. This becomes obvious by looking at the three-pillar-approach and the shift of the supervisory focus from a quantitative to a qualitative viewpoint.

The largest points of contact of both models lay within the basic framework and their central design features (both models are based on three pillars). This is particularly true for the analogies in the constitution of the second and third pillar.\textsuperscript{278}

Reasons for that are on the one hand the role model function of BASEL II and on the other hand a convergency caused by a branch overlapping range of products. Resultant from that a big conformance exists within the supervisory control processes and regulations concerning market discipline and market transparency of the models. These effects should be supported by the national supervisory authority by providing sufficient information about the banks, insurances and their subsidiaries.

\textsuperscript{276} This principle describes a uniform implementation of regulations under equal conditions. That is that all companies in a certain market have to follow the same rules and should have the same ability to compete. (Van Den Bergh/Visscher (2006), p. 511).

\textsuperscript{277} This special process was created to pass a law for the financial industry. This procedure should save time and makes therefore adjustments swifter and contemporary possible. For further information see: European Parliament (2005).

Both models want to support and strengthen the stability of the financial markets and to harmonise the supervision systems and also consumer protection is one of the motivating reasons, especially for insurances under SOLVENCY II.

For both banks and insurance companies are standard approaches and internal models allowed to calculate the capital requirements within the first pillar. Both systems determine their Minimum Capital Requirements in relation to the underlying risks and present them in absolute numbers. However, BASEL II’s and SOLVENCY II’s MCR are totally different regarding their objectives, but this will be discussed later on.

On the international level certain parallels regarding the new accounting standards are obvious. Both systems orientate their reporting strongly on the discussion of the international committees.279 This is important, especially considering the worldwide acceptance of BASEL II and probably SOLVENCY II.280

The IAS/IFRS should fortify BASEL II’s and SOLVENCY II’s objectives in terms of market discipline and transparency with an improved coordination and harmonization of these projects.281

Due to the similar design of the third pillar within both models, this objective will be achieved without big problems. But also the perquisites within the first pillar – the market oriented valuation of assets, liabilities and risks – contribute to the harmonisation within the financial industry and standards.

5.2 DIFFERENCES BETWEEN BASEL II AND SOLVENCY II

Organisation

Though in both cases the European Union set the direction, there are still differences. The first difference can be seen in the starting points and the actors of the models. The project BASEL II was initiated by the Basel Board of Banking Supervision and was examined within several international consultations together with the affected banks and associations. Afterwards the EU took the suggestions and recommendations to BASEL II and passed a respective directive.

In contrast to that SOLVENCY II was created by the EU and incorporated various brain trusts like IAIS and IAA. The responsible committee CEIOPS and its working groups was also originated by the EU. It becomes obvious that compared to the development of BASEL II, which was fostered by the branch itself, all designs and developments of SOLVENCY II is coordinated by the EU.

Regional Scope

At the first view that might not be problematic. However, the implementation has to be considered critically. While BASEL II is developed and implemented all over the world, SOVLENCY II is only a European product at the moment and will first only be introduced within the European Union. This has to be considered especially with respect to competitiveness. Differences occur e.g. to the Risk-Based-Capital-Approach in the US, which does not emphasize so much on market values or regard of incongruities between assets and liabilities. Also no comparable rules like those

279 Schubert (2005), pp. 41-46.
in Pillar II and III of SOLVENCY II exist in the US. Therefore, the main goals of SOLVENCY II (harmonization of the financial markets) are not assured.\textsuperscript{282}

\textit{Maturity}

BASEL II is more mature than SOLVENCY II and has been gradually implemented since 2006, whereas SOLVENCY II has not been implemented yet. It will be implemented in 2010.\textsuperscript{283} Five QIS have been performed for BASEL II and only two QIS for SOLVENCY II yet. The amount of QIS for SOLVENCY II will certainly increase in the coming years, which will improve and adjust the model towards the needs of the industry and customer.

\textit{MCR}

Another difference between the models is the definition of the Minimum Capital Requirements (MCR). For BASEL II the MCR describes the minimum capital on the banks’ and the clients’ level. In SOLVENCY II, MCR determines the absolute minimum boarder of capital for the whole firm. If the company take a new customer into its portfolio the MCR has to be adjusted for the whole company, depending on the kind of risk the new client brings into the firm.

Further the distinction between MCR and SCR, like in SOLVENCY II, is not existent in BASEL II. In-between the MCR-SCR-range the supervision has an enormous room for manoeuvre. Between SCR and MCR the supervisory authority starts to examine the firm and claims suggestions from the management. At MCR or below the supervision becomes ultimate and the firm looses the right to get new contracts.

Neither the calculation of the economic capital (SCR) is a part of BASEL II, nor a holistic viewpoint about the whole firm. However, these points are on the agenda for the following improvements and changes for BASEL.\textsuperscript{284}

\textit{Effects on prices}

As showed in chapter 3.7.3 small changes within the credit pricing will occur for banks.

Insurances have to rearrange their business to be able to consider all relevant risks in an appropriate way. In this way a better risk localisation will be possible and the underlying capital is shifted more accurately. This will particularly affect products with high damage volatility, long time horizons, and products with guarantees and options that could change the underwriting risk. Here probably the prices might increase, since SOLVENCY II claims a change in the underlying capital. The main reason for this is the sensitivity for the Non-Life branch to catastrophes. But also the Life-Insurance branch has probably to face increasing prices for long-term products, especially through the changes in the life expectation. Here higher underlying capital will be needed. So the prices of some products will probably change in the future.

However, since most insurers already now use higher capital requirements, because they know that the current regulation is not sufficient enough, and therefore base their pricing decisions on these requirements, they will probably not change their prices so much.\textsuperscript{285}

\textsuperscript{283} CEA (2006e), p. 11.
\textsuperscript{284} O’Rourke/Kuessner (2004).
Another difference seems to be that through SOLVENCY II the risk management system within an insurance company becomes much more a competitive factor than for banks due to BASEL II. This is since dealing with risks is the core business of insurances, but within banks, risk management is used to protect their main business.

*The step approach for BASEL II – the ramp approach for SOLVENCY II*

The fact that risks are more widespread for insurances compared to banks can also explain why the ways to manage them are different. BASEL II focus on “single risk management approach” (step approach) and SOLVENCY II focus more on “holistic management risks approach” (ramp approach). For example, an insurance company will use reinsurance strategies to hedge against the risks. This is not possible for banks. Insurances have to face a huge amount of risks compared to the bank’s three main risks.

### 5.3 Comparison of Risks

Some minor tools to manage risks are similar (such as VaR) but the majority of tools differs between banks and insurances.

**Common risk**

BASEL II and SOLVENCY II have been created to reduce the same kind of risks. For example, operational risks those are similar for both models. Also market risk for banks and investments risks for insurances are comparable. As these risks are quite the same and interconnected, it justifies the identical structures and the three pillars for both models. However, banks are different from insurances, so the way to manage them differs.

**Variety of risks**

Basically the insurance industry welcomes the orientation on BASEL II, however, it sets great store on the fact that the rules are only adopted after adjusting and discussing them deeply. This will definitely happen, since each bank and insurer has its own individual risk profile. Further, are the calculations of insurance companies for the first pillar are much more complicate, due to the fact of a higher risk variety, e.g. regarding the field of biometric risks. Moreover, longer time horizons and a higher uncertainty of the products make the development of mathematically and stochastically measures more difficult for SOLVENCY II than for BASEL II.

#### 5.3.1 Underwriting Risk and Credit Risk

Although credit risk and underwriting risk have a completely different character and reporting style, some similarities regarding determining factors become obvious and provide potential for mutual improvements. These similarities result from the need of both banks and insurances to examine their clients/risks and to adjust their risk premium according to their default probability. With BASEL II,

287 Banks have of course other possibilities to limit their risk of a client like credit default swap.
clients with low creditworthiness get worse conditions for credits to compensate the higher default risk. Insurances do this since their beginning; they calculate the expected damage and add a risk premium to compensate any kind of deviation risk.

5.3.2 INVESTMENT RISK AND MARKET RISK
The way to manage investment risk and market risk is the same for insurances and banks. BASEL II and SOLVENCY II require the implementation of VaR (Value at Risk), stress test and scenarios. These methods help to anticipate risks and their effects inside financial institutions due to interest or exchange rate volatility.

To invest capital is differently motivated by banks and insurances. Normally banks want to make profit, while insurers try to guarantee their future obligations towards their clients. Of course, they also try to make profit, but due to the guaranty function of their investments; insurers bear an additional risk (not only to make losses, but also to loose clients, prestige, reputation…). Also the banking sector is vulnerable to reputation loss to a certain extent; if they could not pay back their clients’ savings. Since the banking industry uses sophisticated methods to determine the investment risk, the insurance industry will probably adopt some of these instruments.

5.3.3 OPERATIONAL RISKS
For the operational risk there are some basic, standardized approaches and advanced measurement approaches (AMA) for banks. AMA gives the opportunities for banks to do some scenarios analysis. Insurances under SOLVENCY II will also do some scenarios analysis. The use of internal models or measurement systems for banks and insurances are allowed under BASEL II and SOLVENCY II. As they are internal, they better fit the type of bank or insurance and the risks they have to face. So it’s better to improve risk management.

Since, with regard to their existence and potential, operational risks are nearly the same for banks and insurers, the guidelines of BASEL II will probably be transferred to SOVLENCY II. Due to the fact that operational risks are not sufficiently documented within the insurance branch yet, a development of some kind of loss-databases together with a distinction between risks has to be done.

5.4 COMPARISON OF EFFECTS
Even if SOLVENCY II has not been implemented yet, through the carried out QIS, articles and the models themselves it will be possible to compare BASEL II’s and SOLVENCY II’s impacts. This will provide some future perspective of the development of the financial sector and institutions.

5.4.1 IMPACTS ON THE CAPITAL REQUIREMENTS
BASEL II determines MCR for banks. SOLVENCY II determines both MCR and SCR for insurances.

When it comes to MCR, one main difference is based on the MCR’s parameter between banks and insurances: For the banking sector, the MCR can be calculated on the bank’s level and the client’s level. But for the insurance industry, the MCR can be uniquely calculated on the insurance’s level.

For BASEL II, MCR is calculated by the basic approach and the advanced approach (IRBA). These approaches take into account a lot of variables such as the probability of default, the collateral, the exposure of default, and the maturity. These variables depend on the type of counterpart or banks’ clients (MNE, SME, retails...). For insurances, the MCR is calculated with ESA and appropriate variables or by proved internal models.

One other difference is based on the fact that BASEL II’s MCR should be at least 8% of risk-weighted assets (the target ratio for banks) and depends on probability of default, assets and other variables. For insurances, the MCR depends on the probability of insolvency and liabilities under SOLVENCY II. Concerning MCR’s trend, for BASEL II it was expected that MCR would increase for SME compared to MNE because SME have a higher probability of default (higher credit risks) and other risks. But the contrary occurred: MCR has decreased for SME and increased for MNE. This is due to the complexity of IRBA and variables under BASEL II and the development of formulae that are more adequate for each counterpart.

This may be the same for insurance companies: The complexity of the calculation of the MCR will also strongly increase, due to SOLVENCY II. Since the proposed ESA emphasises on a more appropriate distribution and adjustment of the amount of underlying capital, the costs of rearrange and adjust the risk management and measurement system will be high in the short term. But this will pay off in the long term and may be an overall reduction of MCR could be observed in the future. Therefore a higher MCR should be expected, but if insurances manage appropriately the complex model, it may reduce their MCR by calculating the provision for risks in a better way. So, globally speaking BASEL II and SOLVENCY II will change the MCR depending on type and size of the entities.

The SCR will probably increase, since SOLVENCY II will be more orientated on the individual risk situation of the company. For this part, the development of an individual internal model is definitely advised, since a standardized measure could never represent the risk profile of an insurer as good as an individual model.

5.4.2 IMPACTS ON COSTS

The most important role during the implementation of both models within the respective sector will play the introduction or expansion of the risk management systems. This will cause high costs, in the beginning.

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297 CEA (2006e), pp. 6-10.
One has also to take into account that national supervisory authorities will have to face high bureaucracy costs until the new systems are implemented. These costs may also partly be carried by the companies. Though this will lead to critic within the branch, it will not be avoidable.\footnote{Drost (2006).}

In this content hard manageable databases are often mentioned. The amount of data and the quality of data are decisive measures for that. This will lead to adjustments within the organisational structure and processes of both sectors. In which direction the costs will change, depends on the future specialisations and developments of the companies (e.g. outsourcing, delocalisation...).

In reaction to this situation some insurers will probably eliminate some of their most expensive elements by selling parts of the business or changing contracts (reduce guarantees, use loss sharing clauses...).\footnote{Swiss Re (2006), pp. 28-29.}

BASEL II has created some discrepancies between banks for developed and developing countries, local and international banks. This trend may be the same between insurances. The size of insurances will determine how efficient they are in the implementation of SOLVENCY II. Most likely, the global and large insurances will do this more easily compared to the small ones.\footnote{Werrier (2007), p.84.}

\subsection*{5.4.3 IMPACTS ON COMPETITION}

Depending on the size of the financial institution, SOLVENCY II, like BASEL II can increase competition. BASEL II has created some competitive advantages in term of credit price, profitability and reputation. It should favour well-established, large banks and insurances on the long term.

Large banks for example will quicker implement BASEL II compared to smaller banks because of the implementation cost. This will improve their reputation and credit scoring. Investors and reliable customers will be attracted and retained by a well quoted bank. This maybe the same for insurances: Large and sophisticated insurances will be able to implement SOLVENCY II easier compared to small and simple insurances\footnote{Bradford (2006), p. 25.}. As SOLVENCY II improves the insurees’ protection, large and reliable insurance companies will attract more reliable clients than small one.

\subsection*{5.5 ANTICIPATIONS AND ADVICES (CHAPTER SUMMARY)}

BASEL II and SOLVENCY II will efficiently reduce risks if they are well implemented.

Firstly, both models show some similarities in terms of objectives, costs and resources: Both claim an improvement of risk management, market discipline, and transparency to fortify the financial stability on an international level, taking into consideration both the parent companies and subsidiaries. This should be achieved by a similar three-pillar structure. But these objectives require a lot of time, resources and organisation’ changes. Despite, the harmonization is important for both parent companies and their subsidiaries in order to assure their international sustainability.

Secondly, these models have some differences in terms of organisation, regional scope and maturity.
Thirdly, their risks are both different and similar. They have some common risks such as investment risks and market risks. Underwriting and credit risks are quite similar, too. Operational risks are also the same for both models. However, in some parts these risks are different between banks and insurances and therefore the way to calculate their capital requirements and the risk management differs.

Considering the implementation of the models, it will require costs and resources. A lot of changes have to be made inside each insurance or bank to make it work. As it was observed for banks, this can create some discrepancies and increase competition. Some global investment banks can do it better than small regional banks. This could be the same for the insurance sector.

A good implementation of these models can improve the reputation, image and quotation of the banks and insurances due to a good risk management. An improved risk management reduces financial risk and protects the consumer in general (for both insurances and banks). In this point, it seems as if a harmonisation between both models is achieved and the stability of financial markets is increased.

This also allows reducing the MCR in general due to a well implementation of the advanced approaches under BASEL II such as IRBA. This reduction in MCR may reduce the credit pricing. For the insurance sector, this trend may be observed too in the future, if the insurance is able to implement the ESA or an internal control system to calculate their MCR and SCR in a correct way. Also here one can see that the capital requirements fit better to individual risks within both models. This shows that there is a harmonisation between both models.

Risk management is a competitive factor for both banks and insurance companies. Financial stability of the market could be achieved or improved through this increasing competition. Firms look closer to their risk structure and all market participants have better conditions, if banks and insurances have a lower probability of default. With respect to this both models contribute to the harmonisation of the sectors.
6 Conclusion

This chapter is going to answer all research questions that have been stated at the beginning of this thesis. The focus will thereby lay on the conclusions that have been found in the previous chapters. As an outcome some perspectives for financial institutions considering BASEL II and SOLVENCY II will be presented.

The investigation of two enormous complex models like BASEL II and SOLVENCY II could lead, as it continues to develop and improve, to an intermediate result and picture of the current discussion. Bearing in mind their permanent evolution, an ultimate and complete presentation of both supervision models is not possible at this point in time. BASEL II and its development are almost completed and the implementation process still needs a few individual adjustments on the national level. The new rules have been active since the 1st of January 2007. But although the work on BASEL II is completed, the work of the banking supervision is not done yet. Topics like the redefinition of the regulated capital and the design of mathematical models to compute credit risk and economic capital have to be discussed. Since harmonization still needs improving, new supervision models like BASEL III and IV are already part of the debate.\(^\text{304}\)

6.1 Discussion of the Research Problem

The research problem was the following: “What are the potential consequences of the new supervision models BASEL II and SOLVENCY II for the financial industry?”

To be able to discuss the problem statement, we are now going to answer the stated sub-problems, which were:

1. What are the industry specific risks within the banking and insurance branches?
2. Why are supervision models needed within the financial industry?
3. What do the models BASEL II and SOLVENCY II consist of?
4. How are these models implemented?
5. What are BASEL II and SOLVENCY II’ effects on the banking and respectively insurance industry?
6. How different or similar are both models?
7. Do BASEL II and SOLVENCY II contribute to harmonize the regulations within the European banking and insurance industry?
8. In which way does BASEL II help to anticipate the developments of SOLVENCY II?

To 1: What are the industry specific risks within the banking and insurance branches?

For banks, there are three main risks: The credit risks, the market risks, the operational risks and their sub risks. For insurances, there are also three main risks such as the underwriting risks, the investment risks, operational risks and their respective sub risks. All these risk are interconnected and very contagious for financial institutions and their subsidiaries in the globalization context.

\(^{304}\) O’Rourke/Kuessner (2004).
To 2: Why are supervision models needed within the financial industry?

These models allow to manage risks for banks and insurances. BASEL II appears to be the answer to financial crises, insolvency problems, and credit risks for banks, which are not sufficiently hedged. SOLVENCY II may counter instability within the insurance sector in case of insufficient equity accountment. Due to increasing risk ranges and international interconnections of business activities, like having subsidiaries across borders, trading with customers all over the world (in may be different risky environments) more sophisticated measures and tools are needed to really face these changes.

These supervision models are necessary as both businesses deal with a lot of risks that are sometimes interconnected. These models tend to consolidate their financial stability.

To 3: What do the models BASEL II and SOLVENCY II consist of?

Based on three pillars, BASEL II provides recommendations to compute Minimum Capital Requirements, improves the supervision process and the market discipline for banks. Some techniques require more data than before. For example, the use of IRBA requires some variables such as PD (Probability Of Default), LGD (Loss Given Default), EAD (Exposure At Default), M (Maturity), EL (Expected Loss) and UL (Unexpected Loss). Other techniques complete the basic and advance approach such as the Stress Test, VaR and scenarios analysis. As BASEL II is complex, the degree of implementation differs between regional and global banks, between banks from a developing country and banks from a developed country. This is due to the complexity of formulas and approaches such as IRBA.

SOLVENCY II has been designed in 2003 to complete the former regulations, especially SOLVENCY I, in terms of risk management and financial stability, and to harmonize the regulations within the financial sector – regarding BASEL II. This model is based on pillars similar to BASEL II. The MCR and SCR are the core elements. These capital requirements are completed recommendations to improve the market discipline and the supervision. SOLVENCY II provides new approaches to calculate these capital requirements and improve the risk management in general: ESA, internal control, Stress test, and VaR.

To 4: How are these models implemented?

BASEL II can be implemented gradually by beginning from the basic approach to advanced approach.

For SOLVENCY II, the implementation of standard approach is possible at the beginning but it is highly recommended to develop an individual internal risk measurement system to manage and control the individual situation more properly.

So BASEL II is more a “step by step” approach and SOLVENCY II is more a holistic approach. In other words, banks can first implement the easiest approach and then improve the risk management by implementing a more sophisticated approach under BASEL II. Since the insurance industry is based solely on risk, the new model has to be implemented as a whole.

However, both models have to be implemented internationally to accomplish a stabilizing effect. Implementation of these models in too few countries would create a disequilibrium between capital
requirements for international operating banks and insurances. This would worsen the risk situation, through affecting the firms’ competitive environment, instead of improving it.

To 5: What are BASEL II and SOLVENCY II’ effects on the banking and respectively insurance industry?

Some impacts have been observed: A global reduction in the MCR (QIS 5), especially for small entities, a decrease in the credit price, a higher cost of implementation, resources and time. Competition is also more important between the different types of banks. The level of debt may also increase in general and make some European countries adopt the USA’s debt profile. But BASEL II is positive for the reputation of a bank and improves its risk management. By working closely with the International Accounting Standard Board, the Basel Committee will be consistent with the IFRS/IAS standards. This should fortify their main objective on the long term, i.e., the financial stability.

The effects of SOLVENCY II are first important in terms of costs, resources and especially considering IT, and policy management inside the insurance sector. Some QIS provide the conclusion that SOLVENCY II will be difficult to implement inside insurances. This model is not really accepted because it is too complicated and some adjustments are required to be adopted.

Insurance companies should adjust their risk management system continuously, even if it is problematic at the beginning, but if they do not, problems will appear not only with the supervision, but also with their competitiveness.

To 6: How different or similar are both models?

Both models aim to ensure financial stability. They are based on three common pillars: Capital requirement, supervision review and disclosure requirement. In addition to that, they require resources, time and change inside bank and insurance’s risk management. However, some differences can be observed considering their parameter, their maturity and their organisation. Some of their risks are similar and others are different. That is why their managing differs between banks and insurances.

To 7: Do BASEL II and SOLVENCY II contribute to harmonize the regulations within the European banking and insurance industry?

In order to answer this question a comparison between the two supervision models was performed in chapter five. As a result of this we notice that: Both of them have common objectives, such as financial stability, improvement of the supervision and an improvement of transparency and market discipline. These objectives are implemented through a common three-pillar structure: Capital Requirements, Supervisory Review and Disclosure Requirements.

Adequate determination of capital requirement allows a better risk management for both banks and insurances. For both industries their risk management becomes a competitive advantage, which improves the financial stability due to higher competition. This fortifies the harmonization of financial markets. Thanks to this harmonization process on the European level, a doubled examination between countries can be avoided. By efficiently managing the risks on both parts of
the financial market, the models contribute to the harmonization of international financing regulations.

Furthermore, both models protect customers and investors against defaults. It becomes obvious that also this part contributes to a synchronisation of both sectors. The convergency of IAS/IFRS and the regulations for the models also fortify the harmonization process. This is particularly true for the valuation approaches (Pillar I) and the disclosure requirements (Pillar III).

**To 8: In which way does BASEL II help to anticipate the developments of SOLVENCY II?**

It could increase competition between insurances, since there was an increase in competition under BASEL II.

MCR may probably decrease for some business lines. Therefore the respective product prices will change too. This trend has been observed under BASEL II for banks, especially for small entities.

SOLVENCY II can also improve the reputation of an insurance company, since it will improve their trustworthiness towards potential clients. This situation could also be observed under BASEL II for banks.

Insurances can also require a lot of resources and time to implement SOLVENCY II. They will also change some aspect of their organization, especially considering the supervision and risk department. That was exactly the case for banks under BASEL II.

Not only is BASEL II necessary inside a bank, but SOLVENCY II has to deal in the right way with every kind of financial risk. Indeed, dealing with risks for insurances and banking activities is different and needs appropriate formulas to compute the capital requirements for each of them correctly. BASEL II and SOLVENCY II allow dealing adequately with each risk.

### 6.2 Final Considerations and Recommendations

Out of the answers of the previous questions the research problem could be answered as follows and some recommendations could be provided. The most important expected effects for the financial institutions are:

- Time and resources will be one of the main necessities for banks and insurances by implementing the model in both parent companies and subsidiaries.
- The organisation has to be adjusted, especially the risk management. Here the development of internal risk measurement system has to be done. Some possible restructuring and outsourcing can be the result.
- An overall decrease in MCR appears under BASEL II, especially for SME and Retail. Also under SOLVENCY II such a development could be expected for some lines of business. Consequently the price of credits is slightly decreasing within some banks and insurance products for insurances.
- For insurance companies SCR is most likely to increase compared to SOLVENCY I’s SCR, since the new determination of SCR is more accurately orientated on the individual risk profile of the company. However, since most insurance companies currently use a higher
SCR, because they realized that the previous regulations are not sufficient, for them it will probably not change so much.

- An increase in competition has to be expected due to the decisive role of risk management.
- The reputation can be improved if the models are implemented in a proper way. This will be supported by an increase in customer protection.

Resultant from these impacts some recommendations could be given for banks and insurances. These recommendations might be especially useful for institutions that are right at the beginning of the implementation process. Moreover, some suggestions for regulators are made.

- Human resource management has to consider the necessity to hire skilled persons, who have good knowledge about these models and calculation approaches. To make it work they can also make the staff more sensitive to the model by organizing some training sessions.
- This will be useful to implement the respective model in an efficient way. Some changes have also to be done in IT, since both banks and insurances have to be able to provide reliable information on a daily basis in order to satisfy their obligations towards the new risk management requirements.
- In order to be ready for the implementation they should prepare some available financial funds.
- The risk management should be aligned with the corporate strategy on the long term.
- Regulators of BASEL should work closely with IFRSB to keep continuous pressure on the harmonisation process within the financial industry. Furthermore, they should provide some training for IRBA, to improve the implementation process. The same will be relevant for the supervisors of SOLVENCY II and the implementation of ESA.

To sum it up the implementation of BASEL II and SOLVENCY II is a big challenge for both the banking and the insurance sector, but it is worthwhile.
7 RESEARCH CONSIDERATIONS & CREDIBILITY CRITERIA

This chapter will provide some preconceptions of the authors as well as a critical consideration of the literature review. Furthermore the reliability, validity and generalisability will be discussed and some suggestions for further research will be outlined.

7.1 PRECONCEPTIONS

Both of us have studied Business Administration respectively in France and Germany. Our specifications are Finance, Marketing, Management, Accounting and Taxation. We both studied the Master Program in Accounting and Finance at USBE 2006/2007. However, during our studies, neither in our home countries nor here in Sweden we studied one of the presented and analysed supervision models BASEL II and SOLVENCY II.

We have chosen this topic because it is a current and major issue for financial institutions nowadays. The topic is also related to theories about financial risks, which have been mentioned during the Master in Accounting and Finance program at USBE, such as exchange rate or market risks. But the classes we had during the program in finance were not related to the supervisory process. That is why we think were not biased while analysing these two models and while interpreting our results. We were only influenced by our findings themselves. We think that these two models and their links with financial institutions can provide us knowledge and opportunities for our future career, but this will not influence our objectivity within this work.

7.2 CRITICISM OF LITERATURE REVIEW

All sources, like books, articles, research papers, and journals can be found in the databases of USBE like ALBUM, EBSCO, e-Journal and the internet as well as in the databases of ThULB (library of University of Jena, Germany). The search engines Google and Google Scholar provided us also with most of the used information. Within the search function, keywords like: BASEL I or II, SOLVENCY I or II, Quantitative Impact Studies, QIS 1, 2, 3, 4, or 5, impact, banking, and underwriting were used. Often also combinations of these keywords were entered. But also the homepages of the main responsible authorities for both projects like European Commission, European Union, CEIOPS, and others were used by the authors to gather the needed data. The used secondary sources are basically in English, but since we are from France and Germany also French and German sources were used.

The large amount of sources obtained from the European Union and its sub-organisations was especially used to present the two supervision models BASEL II and SOLVENCY II in chapter three and four. This is also true for the examined Quantitative Impact Studies (QIS), which were designed by authorities of the European Union/European Commission. In our opinion these secondary sources are quiet reliable and relevant, since the purpose of these QIS was closely related to the aim of our work and were published by well-established institutions (BCBS, CEIOPS, CEA, European Commission). However, since some of the original sources, especially for some of the QISs, are already some years old and have been developed in the mean time, also articles and journals that dealt with the interpretation of the QIS results were used to investigate these
developments. While doing this we have always used newspaper and articles by taking into account that some articles may be biased due to the respective author.

### 7.3 Trustworthiness of the Sources

First, it is important to check the reliability of the sources. These sources are collected from well known institutions such BCBS, the European commission and BIS for BASEL II, CEIOPS, CEA and ACAM for SOLVENCY II. Their members are from different countries, central banks and supervisory authorities. These institutions work closely with well establish audit cabinet such as KPMG and PWC. So we think these sources are reliable. They have also been completed by numerous books, articles, newspapers and internet pages.

The authors tried to diversify the sources, but in some parts, the sources are specifically linked to the organization, which has created the original model.

### 7.4 Generalisation

Data was collected from 202 banks in the QIS 5 under BASEL II, 312 insurances from 19 countries for the QIS 1 and 514 insurances from 23 countries for QIS 2 under SOLVENCY II. These banks and insurances are from different countries, with different structures and sizes. For example, the 312 insurances of QIS 1 of SOLVENCY II take into account Life, Health and Non Life insurances. The 202 banks within QIS 5 of BASEL II are also from developed and developing countries, with different kinds of activities and structures. That is why the analysis of the results could be accepted as generalisable.

These sources are based on well established institutions that provide numerous papers, studies, and surveys. These sources were also completed by other books, articles, newspapers and internet pages. This is especially interesting to have a different point of view of researchers considering the impacts. This helped the authors to see a general trend about the impacts of BASEL II and SOLVENCY II for banks and insurances, respectively.

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8 SUGGESTIONS FOR FURTHER RESEARCH

This thesis showed up some possible developments and potential impacts for the financial service industry. However, since especially SOLVENCY II is still not ultimately designed, only actual tendencies could be examined. After the passage of the first SOLVENCY II directive (may be end of 2007) further research could be done in this area. When the calculation methods and qualitative elements are definitely designed more concrete investigations of impacts could be performed. Then also examinations of the employed formulae regarding effectiveness, suitability and appropriateness for managing risks could be carried out.

With the help of clear formulated guidelines also the potential development of MCR and SCR might be better traceable and could therefore deeply analyzed.

As some banks have not implemented IRBA yet, as recommended by BASEL II, further research can be done in this area in terms of anticipations and recommendations.

Also with regard to IAS/IFRS possible interconnections or reporting margins for e.g. technical provisions or financial instruments could be analyzed for both BASEL II and SOLVENCY II.

Furthermore an analysis concerning the development of competitiveness and/or potential evasion actions of the new regulations could be haunted.
APPENDIX

Table A: Population for QIS 5 (Quantitative Impact Study 5)

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Group 1: 56 banks</th>
<th>Group 2: 146 banks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard approach</td>
<td>Advanced IRBA</td>
</tr>
<tr>
<td>G-10 banks</td>
<td>30</td>
<td>43</td>
</tr>
<tr>
<td>European non G-10 banks</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Other non G-10 banks</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Total*</td>
<td>40</td>
<td>55</td>
</tr>
</tbody>
</table>

Number of banks participant for each BASEL II approach.  
Total*: As a bank may use many approaches, the sum of banks participant providing data for each approach is superior to the number of bank itself.

Figure A: Expected timeline of SOLVENCY II.

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