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Regulatory Risk on the Financial Markets and Expected Impact of the New Basel Accord on their Effectiveness

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DECLARATION

I confirm that I have written this master thesis independently and that I have used only the sources indicated.

…… ……

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ABSTRAKT

Ve své práci se soustřeďuji na regulatorní riziko působící na efektivnost finančních trhů. Popisuji specifika úpravy finančních trhů u nás a ve světě, zejména pak vývoj úpravy kapitálové přiměřenosti bank. Dále se zaměřuji na praktické problémy spojené s implementací Nové basilejské dohody (Basel II), ale rovněž na výhody plynoucí z jejich nasazení pro banky. Závěr práce je věnován zhodnocení očekávaného dopadu nových pravidel na efektivnost finančních trhů a zamyšlení se nad budoucími perspektivami regulace finančního systému.

ABSTRACT

In my thesis I focus on regulatory risk affecting financial markets effectiveness. I describe specifics of financial markets regulation in Czech Republic and in the World, particularly the development of bank capital adequacy regulation. Further I discuss practical problems connected with implementation of New Basel Accord (Basel II), but also its advantages arising for banks. Last part of my paper is devoted to the evaluation of expected impact of the new rules on the effectiveness of financial markets and to the consideration of future perspectives of financial system regulation.

Contents

Chapters

Tables

Graphs

1 Introduction

This master thesis is devoted to the risk connected with regulation and supervision on the financial markets (with the focus on banking sector), so-called regulatory risk, development of the regulatory framework, particularly Basel Accord, and the expected impact of Basel II on the financial markets effectiveness. The thesis proposes that positive impact of the new regulation of the financial markets will outweigh the negative effects. The aim is to analyze costs and benefits of this new regulation and to answer several questions: Do the positive effects prevail? Or the regulatory risk arising from Basel II is too limitative for the financial institutions? What is the relationship between the capital banks are asked to hold and their profitability? Is the Czech Republic doing well on the field of financial market regulation, supervision and capital adequacy fulfillment? There are indeed many things to be improved and this thesis intends to comprehend new trends and effects of the regulation.

Further introduction describes a current development of the World financial markets and explains the motivation for the changes in regulatory framework. Second chapter focuses on the explanation of regulatory risk and summarizes a survey of the concept of regulatory risk for senior risk managers. Third chapter explains the specifics of financial markets regulation in the World and recent framework in the Czech Republic. Special parts are devoted to the new trends in regulation and supervision and to the development of the Basel Accord. In the fourth chapter there is a detailed description of the new rules of Basel II and calculation of the capital requirements. Fifth chapter analyses the impact of Basel II on banks, describes the features of securitization and regulatory arbitrage, discusses the results of quantitative impact studies which predicate about the capital requirements changes; further this chapter analyses the impacts of capital adequacy on the banks' performance. Finally, chapter six discusses several deficiencies of Basel II and designs future perspectives of the financial markets regulation. Chapter seven concludes the findings.

In spite of several shocks at the beginning of this century, such as a world-wide economic slowdown, major corporate defaults (Enron), a sovereign default (Argentina), the events of 11 September 2001, and the bursting of the technology bubble, having a large spillover into the European banking sector, there have been many promising structural trends

on the field of EU banking sector. Adoption of a single currency and a single monetary policy helped banks customers to compare bank products and costs. This increased transparency, in turn, fosters competition among banks. Although the enhanced competition leads to lower bank margins, but it promotes restructuring and consolidation among banks in the euro area, which in turn helps them to compete globally. Banks all over Europe are merging or forming alliances on an unprecedented scale, thereby drastically changing the national banking environment and creating international networks. These trends are connected with diversification of banks' activities in terms of geographical scope and business lines, integration to bigger and more diversified financial groups and significant improvement of risk management.

During last years there have also been the important changes in the regulatory framework going hand in hand with the above mentioned developments and bringing a new scope for the regulatory risk. At the international level, first and foremost the Basel Committee on Banking Supervision[1] (thereinafter BCBS) revised the capital requirements for banks (Basel II or New Capital Accord, further discussed in detail) which are expected to have an important structural impact on the banking industry. The basic features of the new framework are its increased sensitivity to credit risk and a new capital charge for operational risk.

At the domestic EU level we can observe the institutionalization of the cross-sector cooperation between different supervisory authorities. The financial infrastructure banks use, in particular the securities and derivatives exchanges, is also undergoing major changes such as demutualization and consolidation, mainly driven by the need to realize the full cost potential of an integrated European financial market. The importance of financial conglomerates does not only have an impact on the way supervision is organized, it also requires an appropriate supervisory regime, and hence the specific directive is now being developed at the European level. Several EU countries are engaged in an overhaul of their financial laws in order to keep up with market developments. (ECB, 2002)

[1] Basel Committee on Banking Supervision was founded in 1975 by governors of central banks of Group of Ten countries (G-10); today it consists of representatives of banking supervision and of central banks of G-10 countries and Luxembourg (Belgium, France, Italy, Japan, Canada, Luxembourg, Germany, Netherlands, Sweden, Switzerland, Great Britain and USA). Most often they meet in Bank for International Settlements (BIS) in Basel, where a board secretariat is situated.

There are however new risks arising from the new developments and integrated risk management is becoming more important. Some abuses during the equity boom of the past years and the growing complexity of investor products have increased banks' legal and reputation risk. Related to the particular phase of the European business cycle, the profile of the banks' income, credit and market risks were affected. Of a more structural nature are the risks related to the integration process following the wave of mergers and acquisitions in the banking sector. Operational risk may be increasing because of system expansions, the growing demand for execution speed and the integration problems. This type of risk can be managed by combining IT systems. Newly there is a capital requirement for operational risk, but this kind of risk has the complicating feature that it is very hard to quantify.

Supervising a newly formed group is also particularly challenging for authorities as risks are very difficult to assess, for example because of different accounting and risk management systems, difficulties in establishing harmonized databases, and coordination problems between different authorities. Legal and reputation risk seems to have become more important for banks as a result of some excesses during the past equity boom, e.g. conflicts of interests between the customer business and the proprietary business of investment banks in the United States, as well as abusive practices in the allocation of shares in initial public offerings during the internet bubble. In Europe, similar concerns have arisen in relation to banks' asset management and investment banking businesses, as evident, for example, from an increasing number of customer complaints.

2 Regulatory Risk and Financial Market Effectiveness

Financial services regulatory environment today holds as much uncertainty and risk as never before. The supervisory process has become increasingly subjective and qualitative with changeable standards. Moreover, a regulated bank that fails to meet subjective expectations of the regulators will almost certainly create strategic and tactical impediments for itself. To avoid such deterioration, banks must identify and manage regulatory risk. Regulatory risk can be defined as a risk of loss from inability to fulfill regulatory measures, e.g. meet capital adequacy requirements, and from failing in forecasting future regulatory measures.

Broader definition of regulatory risk comes through its effect on regulated firms. Regulatory risk arises when the interaction of uncertainty and regulation changes the cost of financing the operations of a firm. Regulatory risk therefore responds to all of the important sources of uncertainty for which the effect on the firm arises from, or is magnified by, the existence of regulation. This definition imposes no particular "sign" on the effect of regulatory risk, so it is also possible for such risk to reduce the discount rate of a firm. For example, an increase in the level of regulatory risk faced by a firm subject to direct regulation, may lead investors to alter their portfolios in favor of some other. (Ergas, 2001)

The uncertainty connected with regulatory risk is of two types: "Market uncertainty" is the constant companion of all commercial activity and its effects are felt by both regulated and non-regulated firms. It is such uncertainty which would remain if all relevant regulatory interventions ceased and includes impact of external cost shocks, unanticipated technological advances, shifts in preferences, changes in the distribution of income across people and changes in the distribution of people across regions. Market uncertainty represents the alternative opportunities available to portfolio investors and therefore with interaction with returns required by investors in regulated assets this uncertainty is crucial to determining the effect of regulatory risk. Second type of uncertainty arises from the existence of regulatory discretion: the outcomes from the future stream of regulatory decision making processes are uncertain. This "regulatory uncertainty" only exists for those activities that are actively

controlled by a regulator in some way. Regulatory risk is the expected cost of the interaction of regulatory controls with uncertainty of both types (Ergas, 2001).

Concerns about possible deterioration of credit quality, along with requirements in the new Basel Capital Accord, will focus regulators on the rigor and robustness of credit-rating methodologies, default and loss estimations, reserve methodologies, and the underlying data requirements. The regulators will also evaluate how such measures are integrated into pricing, management and board reporting, decision-making, and the evaluation of economic capital needs, in addition to regulatory capital requirements. Regulators' increased willingness to use public and private enforcement sanctions, to press management to address perceived weaknesses and to send a forceful message that they will not tolerate inertia in risk management has added appreciable risk to the management of regulatory relationships and expectations. Trend of the convergence in approach along regulators across national and functional boundaries makes regulatory risk management a global challenge for multinational financial conglomerates. This convergence trend must address regulatory expectations in a coherent and efficient manner across businesses and jurisdictions while remaining mindful that significant national and functional distinctions in rules and expectations remain. Regulatory risk in each jurisdiction must be actively managed both locally and centrally.

2.1 Responding to the Challenge

A general risk management life-cycle framework of risk identification, measurement, monitoring, and management can be useful. Most important is the need for active board of directors and senior management involvement at all stages of the risk management cycle. The combination of continuous supervision and examiner specialization often leads to moving goal posts of regulatory expectations. Further, standards begin to emerge in practice often well before any written rules or guidance defining those standards are issued. Accordingly, it is critical to engage policy-level regulators in an ongoing dialogue to learn about burgeoning concerns at the earliest opportunity. This underscores the importance of managing regulatory relationships at very senior levels, where the dialogue is likely to be most searching and strategic. The regulators also expect to be kept apprised of high-level issues and developments long before they discover them during the supervisory process. Clearly, striking this balance

is more art than science, and it evolves over time as the relationship develops bonds of mutual trust. Put another way, as regulators show that they are able to take a measured response to issues that management has identified and is trying to resolve on its own, management should be more willing to share its most introspective concerns.

Measuring and monitoring regulatory risk are equally critical, because once a bank falls out of regulatory favor, management will be forced to spend valuable time on damage control and remedial action, and possibly may encounter regulatory impediments, formal or informal, to expansion. This process builds on the ongoing communication between regulators and the management. Even the best examination or internal audit leaves a punch list of matters to be addressed. Therefore, it is imperative that all examination and audit findings be prioritized and resolved in a timely and effective manner. Further, senior management and the relevant board committee(s) must closely track progress on a comprehensive and global basis. It is a mistake to consider such matters to be technical issues to be delegated to the compliance or audit Functions. If follow-up efforts are not given a sufficient organizational push, important risk management and control issues may be left unaddressed, and the risk of downgrade will rise markedly.

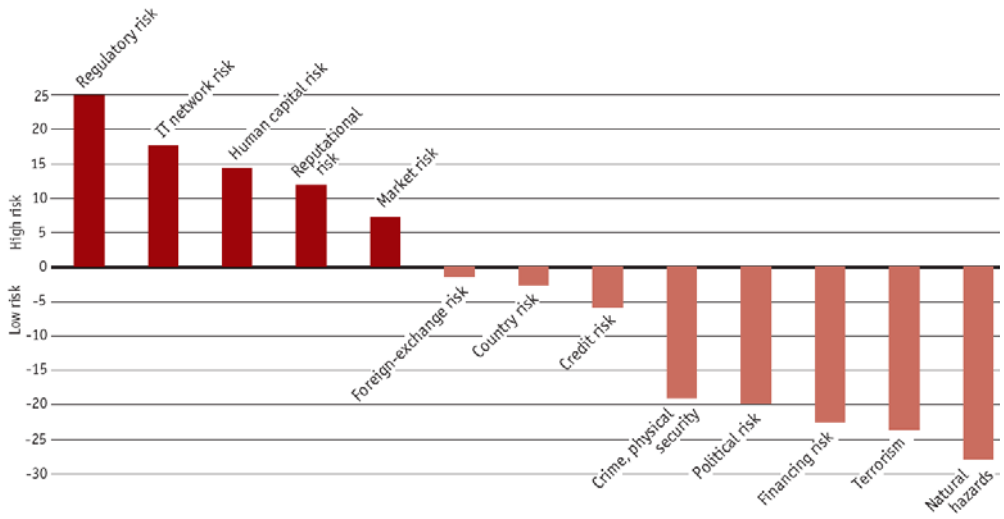
The goal should be to identify best practices that can meet or exceed all local requirements while providing a single regulatory risk management framework throughout the global organization. In addition, as general regulatory issues are identified externally, such as in public actions taken against other banks or in discussions with key regulators, there must be a process to evaluate the bank's vulnerability to regulatory criticism down the road. Finally, managing regulatory risk must be fully integrated into the overall risk management and control framework. An element of regulatory risk is embedded in all other risks since it is the effectiveness of risk management overall that forms the basis for a bank's regulatory standing. One could argue that the risks that expose financial firms to explicit losses - credit, market, liquidity, and operational - are generally much more aggressively managed than are regulatory risks. Ironically, however, it is these very regulatory risks that can derail strategies in an instant and wreak lasting havoc on the bank.

2.2 Trends and Strategies for the Chief Risk Officers

In July 2005 the Economist Intelligence Unit (EIU) carried out a research of regulatory risk based on a survey of 230 senior risk managers, as well as interviews with chief risk officers (CROs) in the U.S., Europe and Asia Pacific cross-section industries. For many of them, regulatory risk is now a greater source of concern than country risk, market and credit risk, IT and people risks, or terrorism and natural disasters. One of the main findings explaining this development is a rising cost of regulation whereas 36% of the respondents believe the cost will rise substantially. According to two thirds of executives in the survey, company customers will ultimately foot the bill for compliance with the regulation. Regulatory risks also increase as firms expand overseas.

Increased complexity in the international regulatory environment is one of the biggest challenges facing companies, with regulations in one country potentially having an increased impact on firms' global operations. Only 20% of companies have high confidence that they are compliant with international regulations such as Basel II and International Accounting Standards. Regulation was found to be a significant deterrent to overseas investment - over 30% of companies have been deterred from investing in a new market because of regulatory issues. Another finding of the EIU research is that companies must seek to stay one step ahead of the regulators and adopt best practice before regulatory change is mandated, in order to minimize the disruption caused by new regulation.

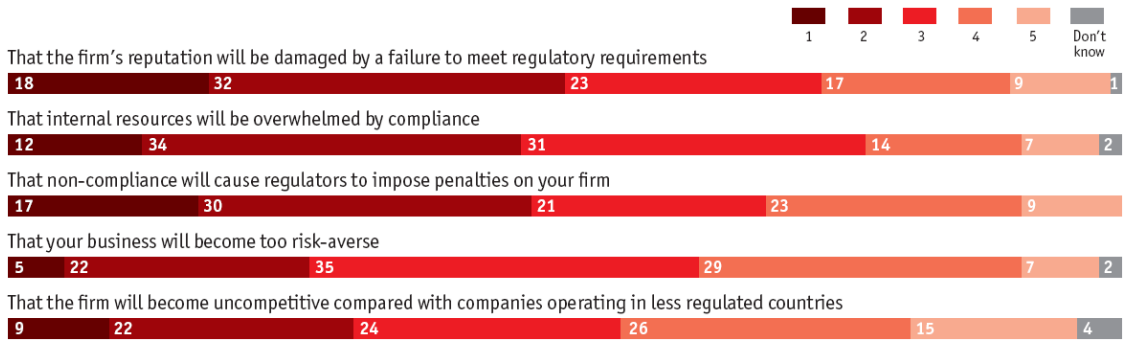
Graph 1 **Category Risk Barometer - Average % Score for Each Category**



Note: High risk figures - % of survey respondents that say a category of risk is a significant threat to the business minus; Low risk figures - % of respondents that say a category of risk is a low threat to the business

Source: Economist Intelligence Unit survey, June 2005

Graph 2 **Significance of Specific Regulatory Risks to the Business of Firm (%respondents)**



Note: Rate on a scale of 1 to 5, where 1=Very high risk and 5=Very low risk

Source: Economist Intelligence Unit survey, June 2005

The introduction of the Basel II framework in the financial services sector requires a fundamental reconsideration of risk assessment and control. This has been costly even for those institutions that had adopted its philosophy at an early stage. Lots of companies considered capital needs from the risk perspective, but not in the precise numerical terms of Basel II. This leads companies to the strategy, which entails building as close a relationship as

possible with domestic and international regulators. The firms may ensure that regulators are familiar with the realities of the business world, and reassure them that management is on top of issues that might otherwise require regulation. Unlike for firms outside the financial sector and firms outside the US, for those in the financial sector, communication with the regulator is seen as more important than adopting best practice. Only half of the financial sector companies saw a direct lobbying of governments on regulatory issues as an effective strategy, however all the respondents gave a high priority to staying in touch with the regulatory agencies. (EIU, 2005)

In the U.S. the anti-money laundering (AML) programs apply a significant pressure on the U.S. banks in order to hold them to a higher standard. "While the regulators and the banks both share the same goal of preventing money laundering and terrorist financing, a $1.0 billion USD per-day problem[2], the current dynamics have led to an environment where the regulators are on the offensive, and the banks are on the defensive." (Deloitte, 2005) Whenever a bank fails to correct any problems with its AML compliance program (or compliance with the requirements of the Bank Secrecy Act), the Office of the Comptroller of the Currency must issue an order to cease and desist, which is a formal, public enforcement action requiring the bank to correct the violation or program deficiencies or, in a worst case, the bank risks losing its banking license.

In 2004 there was a case when a Washington, D.C.-based bank was forced to put itself up for sale after suffering irrevocable damage to its reputation caused by its failure to adequately monitor high-risk embassy and other foreign accounts and to report obvious money laundering being conducted by some of its customers. In 2005, a Jordan-based bank announced termination of its U.S. banking operations after being investigated for suspected money laundering violations. "Some impacts of a cease and desist order are the severity of the action, relatively short timeframes to correct the problems, and the immediate and potentially far-reaching reputation risk damage to the bank." (Deloitte, 2005)

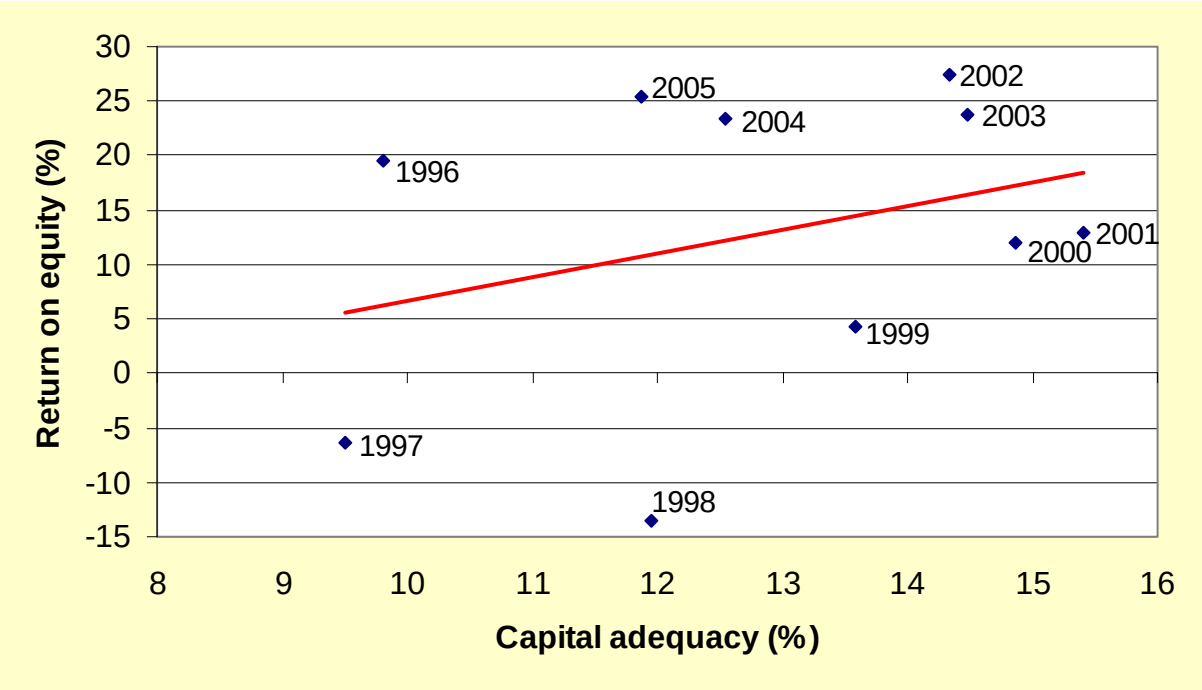
[2] according to the United Nations Office of Drug Control & Crime Prevention

3 Specifics of Financial Markets Regulation in the World and Recent Framework in the Czech Republic

Financial institutions face different risks and have a different balance sheet structure than the other business companies: their capital represent only few percent of the balance. Most of their sources are received deposits and obtained credits, in the other words external financial sources. Assets of the financial institutions consist especially of granted loans and purchased securities. These properties cause higher vulnerability of the financial institutions: when the capital cushion is too low, problems on the assets side, e.g. with loan repayments, have significant impacts on the real value of capital. In case of good results value of the stock rises as the return on equity is high. But when problems arise, the capital can clear off which represents losses both for the shareholders and the clients. This constitutes a conflict of interest between regulators and shareholders.

On the following Graph 3 we can see relationship between return of equity and capital adequacy ratio, defined as capital to risk-weighted assets (see further for details), in the Czech banking sector from 1996 to 2005. Linear trend line applied for this data shows positive interdependence between these two variables. Regression analysis using ordinary least square method estimates coefficient for capital adequacy 2.1768, but of course capital adequacy is far not the only variable explaining returns on equity and therefore hypothesis of zero coefficient in such model is denied on the 10% level of significance. Correlation coefficient between these two variables is 0.31968. (See Table 1)

Graph 3 **Scatter of Return on Equity to Capital Adequacy in the Czech Banking Sector in 1996-2005**



Source: Czech National Bank data

Table 1 **Ordinary Least Squares Method with Dependent Variable ROE**

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value	R-squared	Correlation Coefficient
Constant	-15.0549	29.6239	-0.5082	[0.625]	0.102194	0.31968
CAD	2.1768	2.2812	0.9543	[0.368]		

Note: ROE = return on equity, CAD = capital adequacy
Source: Czech National Bank data run in TSP Version 4.5

Some of the financial risks are regulated to ensure financial markets stability. Financial services, especially banking, have a wide impact on the economy. Financial risk regulation aims to prevent clients and their deposits from default of the regulated institution, ensure public confidence in financial system and safe and healthy banking system functioning, support an effective and competitive financial system and a monetary stability.

Depositors are protected through insurance on the deposits while government is the largest non-insured creditor of the banks and therefore is concerned with capital requirements. Minimum capital requirements decline importance of the deposit insurance. In reality of most of the developed countries an impact is on ensuring a smooth banks' functioning via banking

supervision, because depositors can never evaluate the bank's risk since they lack information and knowledge needed. There exists a compromise between costs of capital requirements introducing and costs of banks' default. Every capital requirement of the institution must be connected with risk management appreciation and with competency of the institution management: regulator judges whether strategy of risk management is consistent with targets of the institution. There is a possibility of regulatory arbitrage defined as an effective chance to avoid any regulation. Therefore it is necessary to unify measurement of capital and risk.

There are different approaches of regulators in the World: a) strict enforcement of all the regulation (India, Singapore), b) overall judgment of risk management level within the institution which creates an open atmosphere between regulator and regulated institution. This approach is common in Great Britain. James Barth, Gerard Caprio, and Ross Levine (2001) made the comprehensive, cross-country survey of how banks are regulated and supervised. This survey includes data of banks in 107 countries regarding bank entry, ownership, capital, powers and activities, auditing, organization, liquidity, provisioning, accounting and disclosure, incentives for supervisors, deposit insurance, and disciplining powers including bank exit. In their repeated survey (2005)[3] Barth, Caprio, and Levine describe in some detail the 2003 version of the database (over 150 countries), investigate the impact of bank regulation on various dimensions of bank performance and look at what determines the decisions countries make on the orientation of the regulatory environment.

Regarding regulations of loans, capital and entry the findings of the research (Barth, Caprio, and Levine, 2005) have been as following: In 22 countries banks are prohibited from making loans abroad and in 17 countries foreign entry through the establishment of a branch is prohibited. Every country except one has a minimum capital requirement that conforms to the Basel I guidelines, but in 122 countries the requirement does not vary with market risk. Some of the more interesting differences among countries are evident when they are categorized according to their GDP or international organizations membership. Following Table 2 summarizes the main findings.

[3] based on the book Barth, J.R., Caprio, G., Levine, R.: *Rethinking Bank Regulation: Till Angels Govern*; Cambridge, March 2006; this book is not available in the Czech Republic yet

Table 2 **Differences in Regulation and Supervision among Groups of Countries**

Lower-income countries	➢ more restrictions on bank activities ➢ lower requirements on bank capital ➢ lower degree of private monitoring ➢ mostly government ownership of banks ➢ deny a greater percentage of market-entry applications ➢ percentage of banks rated by international credit rating agencies is seven times lower than for high-income countries ➢ more limitations on foreign ownership of banks and foreign bank entry through branches ➢ bank supervisors with shorter tenures ➢ low probability (30%) to have explicit deposit insurance plans
European Union members	➢ less restrictive in allowing banks to engage in securities, insurance, real estate activities and mixing of banking and commerce ➢ less restrictive with respect to the ownership of banks by commercial firms ➢ more strict with respect to capital requirements ➢ longer supervisory tenure with more independence ➢ less bank ownership by foreigners and by their own governments
OECD members	➢ less restrictive with respect to the activities of banks and mixing of banking and commerce ➢ reject a lower percentage of domestic and foreign bank-entry applications ➢ more-strict capital requirements, but less supervisory power to government agencies ➢ rely more on private monitoring and corporate governance
Offshore financial centers	➢ the highest degree of foreign ownership ➢ the highest percentage of domestic entry applications denied ➢ the least degree of private monitoring and external governance

Source: Barth, J.R., Caprio, G., Levine, R.: Rethinking Bank Regulation, Conference on Small Countries, Big Markets Achieving Financial Stability in Small Sophisticated Markets; Bank of England and Bank of Slovenia, Ljubljana, October 2005

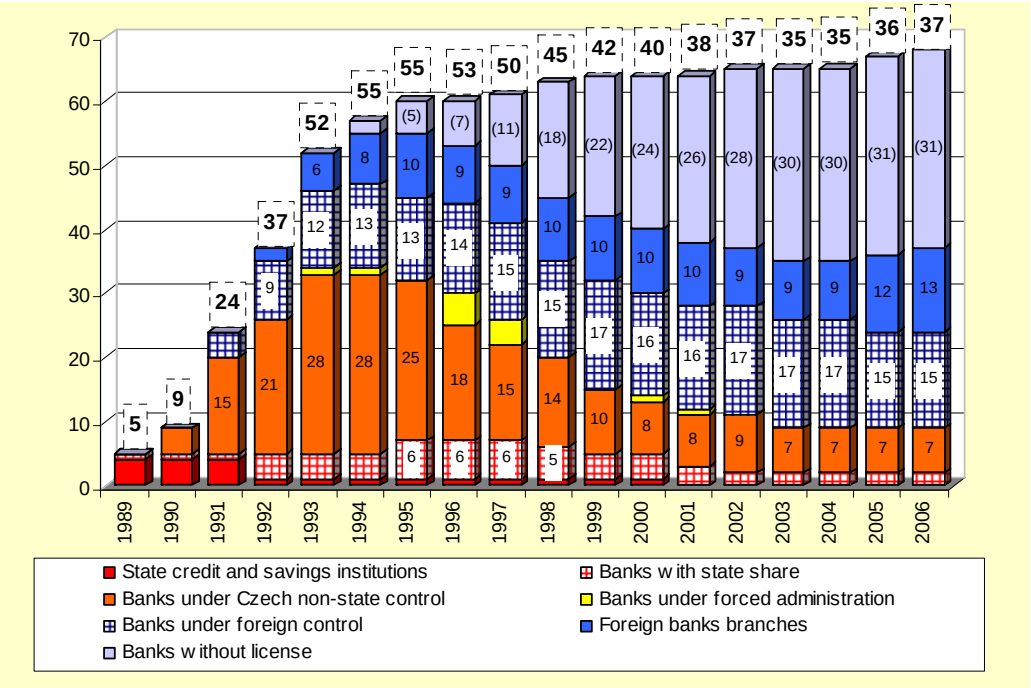
Regulation must be global and hence it requires a consolidated capital adequacy. That result in consistent regulatory instruments and cooperation among regulators, free information exchange and agreements among regulators released many times as so called Memoranda of understanding. Regulators all over the World speed up accepting minimum requirements on publishing of the risk data, which where jointly released by a three-party group of 1) banking regulators = Basel Committee on Banking Supervision 2) investment companies = International Organization of Securities Commissions (IOSCO) 3) insurance companies = International Association of Insurance Supervisors (IAIS). This group was founded in 1995 as "The supervision of financial conglomerates". Principal of the banking supervision is not to impede using advanced methods, but not to allow for their abuse. In the USA banking supervision originate from reaction on financial crises of many people with many opinions, targets and experiences.

3.1 Regulation and Supervision in the Czech Banking Sector

Regulation in the Czech financial sector is related to commercial banks, investment companies (investment funds and securities dealers, formerly under the supervision of Securities Commission), insurance companies, pension funds (formerly under the supervision of Ministry of Finance) and savings banks (formerly under Supervisory Authority for Savings Banks). Supervision over financial sector is currently being integrated into Czech National Bank, which had been before responsible only for commercial banks supervision. Following Graph 4 shows the development of the Czech banking sector measured by the number of commercial banks and at the same time divides the development of the regulatory framework since 1990 into three stages.

Department of the Banking Supervision was found in 1991 in former Czech-Slovak State Bank. It had only eight employees and insufficient legislative framework for its functioning. At that time mainly Ministry of Finance was responsible for the bank regulation. Real development of the banking supervision in this department was started during 1991, but much of its capacity was employed by the preparation and realization of the new legislation and rules of the central bank. Controls pursued in that year were mainly focused on the gain of experience. The supervision started to be effective only during 1993 when also the first forced administration of a bank was introduced. But during this early period a massive increase of the number of banks took place (see Graph 4). Progress in regulation of the banks was falling behind the development of the banking sector itself. In principle, banking sector was being created at the same time as the banking supervision was being defined and taken into account, but did not effectively work yet. (Tuma, 2001)

Graph 4 **Number of the Banks in the Czech Republic According to the Ownership Structure**



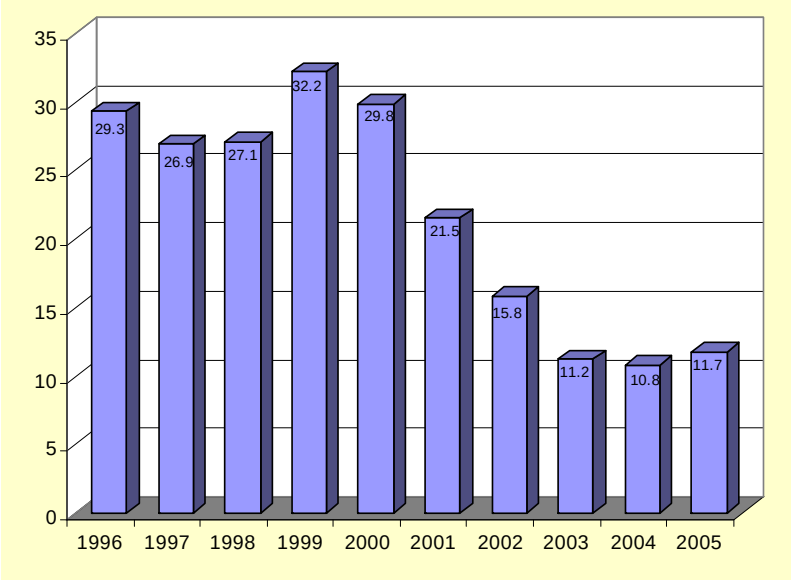
Notes: Numbers in the dashed-line frames above the columns represent total of the banks with license, while the numbers in front of the columns represent banks numbers equal to or higher than 5 under certain ownership in the relevant years.
Figures for 1989 are as of January 1, 1990 and figures for 2006 are as of March 31, 2006. The others are as of December 31 of the relevant year.

Source: Czech National Bank, 2006

This historic development contributed to some of the later problems in the sector, particularly problems on the supply side of the credit market, so called credit crunch. Mainly large banks which got into the difficulties reported a decrease of the credits. However in the other segments of banking sector credits rose, but this rise was not strong enough to prevent from the overall decrease. Indicator which best reflects the seriousness of the problems is probably the ratio of the classified (problem) loans to total bank loans (Graph 5, Table 3). In 1999 the percentage increased by more than five basis points and exceeded 32%. This

problem displays most seriously in the large banks which classified loans reached more than 40% in the end of 1999 and in small banks held by Czech owners (more than 50% of the loans classified) (CNB, 2001). That was, together with the struggle to complete the privatization of the banks, the main reason why Czech government engaged in a wide purification of the banks balances. Ratio of the classified loans started to decrease since 2000 and also the profitability (return on equity) of the banking sector was firmly improving (Graph 3).

Graph 5 **Classified Loans of the Czech Banking Sector as a Percentage of the Total Loans, 1996-2005, as of December 31**



Source: Czech National Bank, annual reports on banking sector, 1997-2005

Regulation of the banks fully developed in 1994-1997. Banking supervision was more focused on controlling and supervising activities. Increase of the number of the banks stopped and the gained experiences were used to the preparation of the cautious rules and requirements for the shortcomings removals amplified. Since 1996 Department of the Banking Supervision has been radically intervening in several banks (see the increasing number of banks without license on Graph 4). In 1996 and 1997 the government program to support of the Czech banking sector stability was formulated. Since 1998 the main target has been to stabilize the banking sector and harmonize the regulatory framework with the EU standards and with the best international practices. This endeavor results from the medium-tern concept of the banking supervision development by CNB from January 1998. More

attention is as well concentrated to the complex control of the risk management and internal controls in the banks.

Legal base for the supervision over financial groups including commercial banks on the consolidated basis was introduced in 2000-2002 when also provision on capital adequacy on the consolidated basis came into effect. Amendments of the main banking acts also introduce changes of the regulatory system and since join of the Czech Republic into the EU, country have been integrating its financial market into the common European market. In 2000, the first provision of CNB on the capital adequacy came into effect and included credit and market risk[4].

Securities firms and increasingly also insurance companies have a prescribed method of financial risk measurement and limits for these risks. In the Czech Republic securities dealer[5] has regulated a capital structure, calculation procedures of capital requirements to credit risk of investment and trading book, requirements to involvement risk of trading book and to market risks. Insurance companies[6] in the Czech Republic are not subject to capital adequacy regulations, but they have prescribed value of registered capital and guarantee fund. Pension funds[7] and savings banks[8], which had been very popular in the Czech Republic until they experienced series of bankruptcies, have also special treatment. Banking sector has the most elaborate precautionary rules within whole financial sector.

Since April 1, 2006 there has been integrated the supervision over financial markets[9] under Czech National Bank. CNB newly supervises insurance companies, pension funds, savings banks and securities dealers.[10] Mergence of the supervision should be completed till the end of 2006 when the design of the unique regulator will be decided by Czech government. It is desirable that the intended benefits would be realized effectively without any regulatory vacuum and additional charge on the market participants. Together with the Ministry of Finance and Securities Commission, Czech National Bank will be preparing a conception of institutional integration and will compile variants of the models of unified

[4] CNB Provision number 3 from 28. 6. 1999, amended in July 2002 and September 2004
[5] Regulation no. 262/2004 on rules of calculation of capital adequacy of securities dealer who is not a bank, on individual basis
[6] Act no. 363/1999 on Insurance and on amendments to some related acts, updated version as of April 2006
[7] Act no. 42/1994 on supplementary pension insurance with state contribution, updated version as of April 2006
[8] Act no. 87/1995 on savings and credit societies, updated version as of April 2006
[9] Act no. 57/2006 on change of acts related to integration of supervision on the financial market

functioning of the regulator including possible ways of its financing. Base of the proposals will be preservation of the continuous functionality of the supervision over the banking sector and savings banks (currently represent c. 80% of the Czech financial market), respecting of the principle of the independent supervision, which is an important attribute of its quality, and a maximum use of the accumulated experience and created informational baseline.

The so called off-site surveillance over banking system involves surveying and evaluating data provided by banks. The department of off-site surveillance monitors how banks follow prudential rules as defined in the respective regulations, recommends candidates for senior managers and confirms the selected external auditors, assesses banking license applications and imposes measures on banks if they do not meet the regulatory requirements. In 1990's off-site inspectors have concentrated too much on the reports and tools prepared especially for the central bank and less on the substance of business risk the bank is undertaking…in order to mitigate this feature the Czech National Bank (thereinafter CNB) supports short "information visits" by off-site inspectors to the respective banks… (Mejstřík, 2004). On-site surveillance consists primarily of monitoring credit risk, but increasingly also market risks arising from the changed scope of bank operations such as trade with the derivatives. This development requires more sophisticated information systems and internal control elements. The existence of a suitable and integrated information and risk assessment system should be very important target for Czech Supervision.

During 1990's Czech banks experienced a problem of timely identification, classification and provisioning of expected credit risk and therefore CNB initiated a regulation on loan classification into five quality classes. These are standard, watch, nonstandard, doubtful and loss.

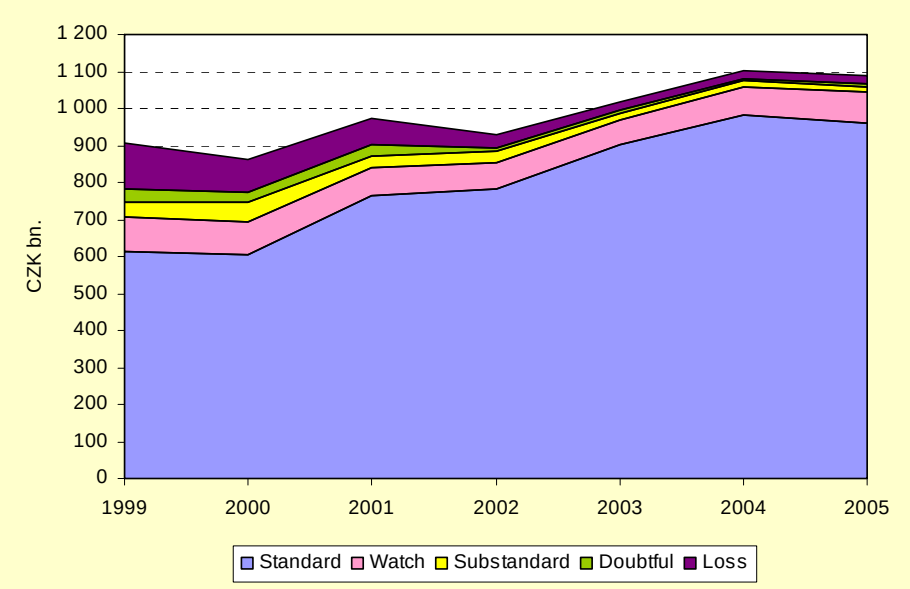
[10] Until March, 31 2006 this agenda had belonged to Office of State Supervision over Insurance System and Supplementary Pension Insurance, Securities Commision and to Office of Supervision over Savings Banks. These three institutions are now integrated into Czech National Bank

Table 3 **Classified Loans, Provisions and Reserves in the Czech Banking Sector in 1999-2005**

	1999	2000	2001	2002	2003	2004	2005
Total gross credits (CZK mil)	905 322	864 103	974 761	931 025	1 017 938	1 100 241	1 089 087
Total problem loans (%)	32.15	29.83	21.53	15.8	11.2	10.8	11.72
Watch (% of all problem loans)	31.7	33.3	36.2	48.5	56.5	62.5	63.4
Substandard (% of all problem loans)	13.5	21.3	15.4	18.7	16.9	16.3	13.8
Doubtful (% of all problem loans)	13.2	10.6	14.2	7.9	6.1	4.5	6.0
Loss (% of all problem loans)	41.6	34.8	34.2	24.9	20.5	16.7	16.8
Total provisions and res. (CZK mil)	103 783	77 141	78 898	58 689	38 039	30 877	29 798
As % of all problem loans	35.7	29.9	37.6	39.9	33.4	26.0	23.3
As % of loss loans	85.7	85.9	109.8	160.5	162.6	155.5	138.7
Provision gap (CZK bn)*	187 278	180 621	130 968	88 413	75 970	87 949	97 843

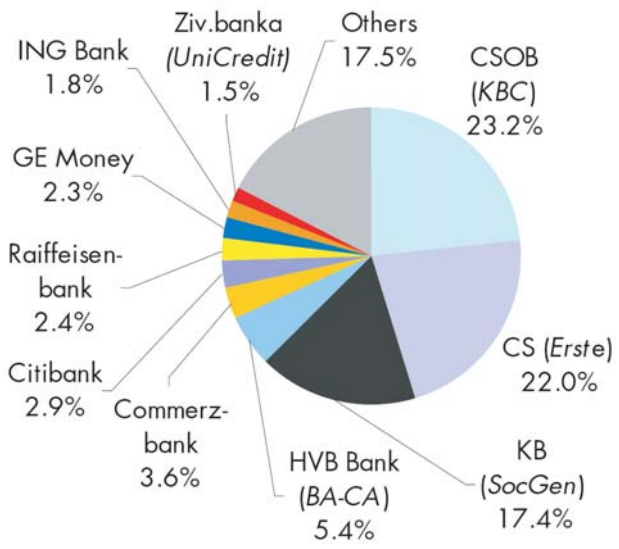
*Note: * Provision gap = total problem loans – provisions and reserves*
Source: Czech National Bank

Graph 6 **Credits of Czech Banking Sector According to their Classification**



Source: Czech National Bank

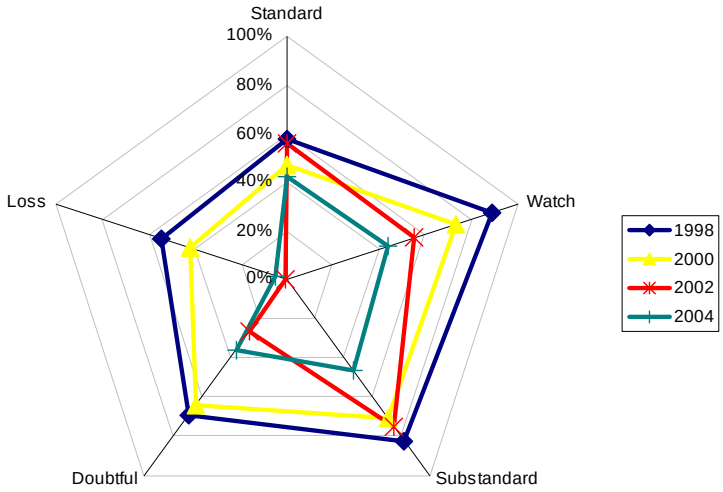
Graph 7 **Czech Banks According to the Market Share (% of total assets)**



Source: RZ Group

Czech National Bank regulates minimum provisions for quality classes of loans: 0% for standard, 5% for watch, 20% for nonstandard, 50% for doubtful and 100% for loss loans of the nominal value of the loan. Another factor mitigating credit risk is collateral, but banks must be very aware of valuation of real estate and to enforcement of the ownership rights.

Graph 8 **Hedge Percentage of Loans with Komerční banka**



Source: www.kb.cz

On the previous schema we can see graduating dilution of the hedge ratio in Komerční banka, the third largest bank in the Czech Republic. For example loss loans in 2004 were collateralized only from less than 5% while in 1998 it was more than 50%.

Surveillance on an on-site basis takes several weeks of inspection of credit files, especially deals with differences in classification and big exposures, and discussions with management. Bank can be requested to create additional provisions or CNB or government can organize some kind of help in case of a big bank ("too-big-to-fail" principle). In 2000 a radical intervention in one of the largest banks, IPB, took place. Both complex on-site surveillance and external auditors concluded that this bank is insolvent. Moreover bad situation of the bank caused a run on bank which undermined the bank's liquidity. To prevent the situation from the whole-system crisis, CNB introduced a forced administration in IPB and quickly resold it to CSOB which is today the largest Czech bank according to a market share. This was a case of the CNB coordination with the government and fast solution which intended to prevent from the moral hazard of the owners of those banks which are "too big to fail".

Internal control and internal audit have been recently attracting more attention. The Czech Banking Act provides for each bank to establish an internal audit department. In this respect it is important that management allows internal auditors to review all relevant information. According to Basel guidelines internal audit must be considered as a service for the management and as an authority for the bank's employees. Supervisors must as well seriously consider policy against corruption, money laundering, conflicts of interest among employees and Chinese walls. Most of the subsidiaries of foreign banks in the Czech Republic are exposed to audit by their parent companies. Supervisors must also pay attention to market risks; prevailing market risks in Czech banks today are interest rate and exchange rate risks.

Czech banking sector has been facing significant exposure to credit risk due to the high information asymmetry resulting in adverse selection and moral hazard. (Mejstřík, 2004) To promote banking sector stability and to improve information background of banks Czech National Bank created the Central Registry of Business Credits which started to operate in 2002. Information on defaults on credits is updated on a monthly basis, which helps to improve banks' credit risk management.

On the Graph 4 we can see the high importance of the foreign owners on the Czech banking sector in the current years. In 1993 there were only 18 out of 52 banks controlled by the foreign investor or like a foreign banks branches (35%), while in 2006 it is 28 out of 37 (76%). Considering such an ownership structure the high priority must be conferred on the harmonization of the standards and procedures with the foreign and domestic regulators. Fundamental is the common binding directives within the EU as well as broader binding accords and practices among countries with developed financial sector. In the EU harmonization is currently represented by an effort to unify the requirements on banks and banking groups (so called High-Level Principles[11]) also in the fields which are not regularized yet. Aim of this effort, in which also the representatives of the Czech National Bank are involved, is the reduction of the regulatory stress which could arise from the different approaches of the national regulators. Need to reach an agreement is amplified as well by the domestic regulator's part in internationally active banks and the consequent need of the

[11] Bank for International Settlements: High-level principles for business continuity; Consultative document of The Joint Forum, Basel Committee Publication, December 2005

effective cooperation with the foreign regulators, particularly when approving the internal models of the risk management.

When conceiving the new regulatory rules the intention was to lay emphasis on the comprehensibility and maximum explicitness. Therefore the proposals will be discussed with the Czech Banking Association (CBA) and the Chamber of the Auditors (CA). In case of the new capital concept the effective and transparent instrument for its implementation will be a collective project of the CBA, CA and the CNB, with the cooperation with former Securities Commission and the Ministry of Finance. Parallel publication of the changes and broad communication with the banks is being prepared together with the relations to public. (CNB, 2006)

Execution of the supervision will be further based on the combination of the off-site and on-site surveillance and use of the results of the banks' auditors for the attesting of risk management systems and financial statements. Czech National Bank is as well building a complex system of the evaluation of the risk profile of the banks based on interconnection of the quantitative and qualitative information on banks in order to implement the New Basel Accord. The system will allow passing judgment on the risks exposed by banks on the higher qualitative level and reinforce the ability of the supervision to identify potential problems of the banks and the possibility of the timely reaction. The level of risk and the significance of the relevant bank for the sector stability will reflect the intensity of the surveillance; particularly the depth and frequency of the on-site surveillance which will be primarily focused on the internal control and test system of the banks. To achieve a higher transparency of the supervision and enactment of its new provisions CNB will publish a new procedures and principles used for the supervision. There is also being prepared a system of the assessment of the quality and effectiveness of the banking supervision which component will be a feedback from the banks and their assessment of the application and quality of the regulation, supervision and the development of the costs raised by the regulation.

Within the analytical practice CNB processes and publishes regular reports on the banking sector, summary records for the ECB and other international organizations, e.g. International Monetary Fund, World Bank, OECD, Bank for International Settlements, European Commission etc. On the field of the licensing there is a simplified approach based

on the information from the relevant domestic regulator. Precautionary measures do not lose their primary importance, particularly those based on the capital resources of the new or incoming banks, capital increases, screening of the shareholders and the connections within their financial groups. In compliance with the international standards and legal responsibilities banking supervision ensures the activities leading to reduction of the risks arising from the money laundering and terrorist financing.

Fulfillment of the CNB targets is subject to important changes in the area of primary and secondary legislation and creation of the new methodical processes. The adjustments will take into account the current regulation suitability in terms of the changes in the sector and requirements applied in the EU and practical experiences with the regulatory exercise (exit from the sector, consolidated supervision, control order). In the secondary legislative there will be a substantial change of the regulation of capital adequacy and increased requirements to disclose the information by banks. For better transparency supervision in the Czech banking sector will have to be based on lower number of directives even at the expense of enlargement of their content.

3.2 New trends in Supervision and Regulation

Improvement of financial services of lenders demands the completion of banks privatization, gradual growing efficiency of bankruptcy procedures to enforce repayment of debt contracts and up-to-date structure of financial regulation and supervision that should mitigate the occurrence of market failures. In the Czech banking sector the consequences of the insufficiently restructured economy could be observed in the end of 1990s. Banks were exposed to a monetary crisis. Defaulting small banks had to exit the market and privatization of the large banks has been completed. Today Czech financial sector is mainly controlled by foreign owners (see Graph 4). In the end of 2005 96.2% of the banking sector assets were controlled by the foreign investors, mostly from the EU countries (91.4 %). First significant phase of foreign investors' arrival came through the privatization of large banks, another important phase related to the wave of mergers and acquisitions is still being held. (CNB, 2006)

Regulatory risk arising from regulatory failure has an unintended negative impact on the regulated entity provided incentive for banks to engage in excessive risk-taking or moral-

hazard behavior. Example of such impact would be misallocation of assets of Česká spořitelna in 1990's on the interbank market without respect to the rating of the borrowings contributed to emergence of loss loans. Regulatory risk hence causes both real unintended costs of regulation and opportunity costs: too restrictive regulation can provide incentive for banks to engage in excessive risk-averse behavior contributing to loss of risk-adjusted profit from missed loan granting opportunities. (Mejstřík, 2004)

Paper by Barth, Caprio and Levine (2001) using the unique cross-country database concludes many interesting findings regarding new trends of the bank regulation and supervision, bank development, which is associated with economic growth, and the three pillars associated with the Basel II Capital Accord. The authors use basic regression results when simultaneously including a wide range of bank regulation/supervision indicators. Following enumeration is the summary of their key findings.

1) Negative relationship between restrictions on bank activities and bank development and stability, as compared to when banks can diversify into other financial activities. Used method was an ordinary least square regression of each of the four outcome variables (Bank development, Net interest margin, Overhead costs, and Nonperforming loans) on various supervisory and regulatory indicators (Capital regulatory index, Private monitoring index, Official supervisory power index, Entry into banking requirements index, Restrictions on bank activities index, Government-owned banks). The results are consistent with the view that broad banking powers allow banks to diversify income sources and enhance stability.

2) Barriers to foreign-bank entry are positively associated with bank fragility. According to the authors, it is not the actual level of foreign presence that matters, but the specific impediments to bank entry that are associated with bank fragility.

3) While the stringency of capital regulations is positively correlated with bank development, strict capital regulations are not closely associated with bank development, performance or stability when controlling for other features of the bank regulation and supervision.

4) Generous deposit insurance schemes are strongly and negatively associated with bank stability. Effective regulation and supervision can mitigate the moral hazard produced

by generous deposit insurance, however, strong official supervisory agencies, strinct capital standards, and regulations that encourage private-sector monitoring of banks are not found to counterbalance these negative associations of generous deposit insurance.

5) Barth, Caprio and Levine did not, despite their expectations, find a strong relationship between a range of official supervisory indicators and bank performance and stability.

6) Regulations that encourage and facilitate private monitoring of banks are associated with better banking-sector outcomes, i.e. greater bank development, lower net interest margins, and small nonperforming loans.

7) Government ownership of banks is negatively correlated with favorable banking outcomes and positively linked with corruption.

These results suggest that regulations and supervisory practices should force adequate information disclosure, reinforce private-sector corporate control of banks, and support the incentives for private agents to help corporate control to work best to promote bank development, performance and stability. The paper at the same time stresses that the accurate regulations and supervisory practices are positively associated with greater bank development, better performance and increased stability. (Barth, Caprio and Levine, 2001)

Future situation in regulatory scope will be strongly affected by capital adequacy concept (Basel II), which better reflects risks exposed by banks, allows wide use of internal models of measurement and management and therefore individualizes capital requirements according to the risk profile of the banks. New concept also determines the role of the domestic regulator in relation to subsidiary companies of internationally active banks.

3.3 Development of the Capital Adequacy Requirements

Depositors' pressure on risk limitation of financial institutions is substituted by concept of capital adequacy arising from the hypothesis that the more capital financial institution has the more financial resources shareholders put in and save up and the greater

interest they have on the right company functioning in order not to lose their money, but the other way round – valorize it the maximum possible.

Essence of the capital adequacy is to measure risks of a subject and state corresponding minimum level of capital so that it covers future losses from today's risks of the subject. Furthermore capital adequacy aims to measure risks of the company in case of potential adverse development of the external economic environment. All potential future losses of the company, connected with today's risks, should be covered by internal sources of the company, i.e. by shareholders' capital. Contrary already existing losses should be reflected to the economic outcome (and therefore to capital) of the company and not to jeopardize external sources of e.g. depositor. Positive value of the capital adequacy indicates that financial institution is solvent and vice versa solvent financial institution has a positive capital adequacy.

In 1960's in USA ratio of required capital (different for each regulated institution) to actual capital was imposed. But it represented complicated calculations. In 1981 minimum capital ratio for all municipal and regional banks was established. A material about capital adequacy of BCBS in form of capital accord is originated from 1988. Capital requirements were set only for credit risk: ratio of capital to risk weighted loans and other assets had to amount to minimum 8%. This capital accord is known as so called Basel I and was binding for all internationally active banks.

- Basel I was the first international document for regulatory measures of financial risks and at the same time a document about covering this risk with capital. There were several aims of capital accord implementation and these remained the same up to the capital accord:
- strengthen the health and stability of international banking system by inciting internationally active banks to increase their capital
- decrease inequalities in competition (i.e. support healthy competitiveness) among internationally active banks by applying a standard method in particular countries in purpose to prevent banks with low capital adequacy from engaging in sizeable activities, e.g. raising their balance by accepting deposits and granting loans without covering credit risk associated with granting loans by capital, clients of banks with powerful capital base would be leaving
- prevent banks from excessive credit risk exposure
- ensure international convergence of capital adequacy regulation of banks with international activity

- make regulative capital more sensitive for differences in risks of different banks
- take into account off-balance sheet activities
- increase motivation for holding liquid and low-risk assets

The document was signed by governors of G-10 countries central banks (countries that are members of the BCBS). Until the end of 1992 ratio of capital to risk-weighted loans and other assets (capital adequacy) was supposed to be 8% minimum in G-10 banks. Capital accord extended to a worldwide standard.

Capital accord distinguishes between two forms of capital: *tier 1* and *tier 2*. The definitions remain the same after finalizing of Capital accord in 2003. *Tier 1* as a core capital is most stable and most quality part of capital, its price is highest. See the following Table 4 for detailed description of the tiers. Core capital includes an equity capital and disclosed reserves, which were created or raised from retained earnings and other surpluses. Disclosed reserves also comprise general funds of the same quality e.g. fund for general banking risks in some EU countries. In case of consolidated accounts in *tier 1* there can be also minority interests in equity of subjects which bank does not entirely own. Excluded from core capital are revaluation reserves and cumulative preferred shares. *Tier 2* as a supplementary capital includes undisclosed or hidden reserves, revaluation reserves, general provisions, hybrid debt/equity capital instruments and subordinated term debt.

Table 4 **Composition of the Capital Tiers According to the Czech Capital Adequacy Regulation**

Indicator	Composition
Capital	Tier 1 + Tier 2 - deductible items
Tier 1	➢ Fully paid-up registered equity capital ➢ Fully paid-up share premium ➢ Legal reserve funds ➢ Other reserve funds created from the after-tax earnings, except for special-purpose reserve funds ➢ Retained earnings from the previous years after taxation, if the earnings had been confirmed by the auditor, general meeting approved the financial statements and decided on the retained earnings
Tier 2	➢ Reserves for general risks up to 1.25% of the risk-weighted assets of the banking book ➢ Subordinated debt A up to maximum 50% of the tier 1 (part of the subordinated debt A excluded from tier 2 cannot be included into tier 3); must hold several detailed conditions
Tier 3	➢ Subordinated debt B represented by granted loan or deposit provided to the bank by a creditor; must hold several detailed conditions

Source: Czech National Bank: Vývoj měnových nástrojů a pravidel obezřetnosti bank; ČNB 2006

Both components of capital have to be able to cover common losses while the bank continues to work (going concern). There are following limitations on the capital components

in Basel I: *tier 2* ≤ *tier 1,* subordinated term debt ≤ 0.5 *tier 1,* further if general reserves comprise lower assets evaluation or latent but unidentifiable losses in balance sheet, then these reserves are limited by 1.25% of risk-weighted assets. Revaluation reserves which certain risk weight in sense of credit risk is assigned to every asset. The weights are assigned also to off-balance sheet items (derivatives included), which are first converted to credit equivalents, i.e. to hypothetic balance assets. Capital adequacy *ca* according to Basel I is defined as ratio of capital (*tier 1* plus *tier 2* minus deductible items) to risk-weighted assets *RWA* and it has to be equal or higher than 8%.

Capital adequacy was accepted as an indicator of the banks' financial power. Banks with higher capital adequacy gained higher credit ratings and thus incited other banks to reach the ratio higher than the required 8%. Capital increase hence was caused more by a business strategy than by the regulatory limit. It is necessary to note that capital increase in order to increase the capital ratio was particularly influenced by knowledge that it is needed to keep a certain capital base for the case of potential losses. National banking supervision can require a higher capital adequacy than 8%. It is straightforward that the Basel ratio can be today viewed as a standard rather than a binding regulatory requirement and higher ratio is positively valued by market.

There is a complex relationship between risk, capital and profitability. Farid (2005) divides capital into operational, economic and signaling components. Operational capital includes very little provision for variances and contingencies. By adding provisions for uncertainty we add risk capital which combined with the operational requirements serves as economic capital. External partners moreover demand an additional measure of comfort that can be provided by adding the signaling capital which indicates that higher rated institution is sufficiently committed to make available an additional layer of security and comfort for clients, stakeholders and employees. Capital has a real cost that is to be paid to the contributors to compensate them for forgoing alternate investment opportunities. Financial institutions then need to maintain a balance between risk taking behavior, capital requirements and the cost of contributed capital; at the same time regulatory authority imposing higher capital requirements does not need to intervene directly.

"When institutions drop below capital adequacy thresholds and fail to fix adequacy ratios they quickly find themselves under regulatory control. Traditionally perception of risks was limited to credit portfolios. This was especially true in emerging markets with protected economies, stable treasury and currency exchange rates. But the arrival of economic growth and trade surpluses led to substantial increases in national wealth and capital stock, limited opportunities for investments, open economies, volatile currency and treasury markets and regional asset bubbles. Extreme and frequent swings in asset prices also highlighted control weaknesses and operational problems that allowed individuals to sink centuries old institutions. At a regulatory level it became important to not just quantify credit exposure but also assess and control market and operational bets, intentionally or unintentionally, being made by senior management and ownership." (Farid, 2005)

"The desire was to retain the single capital adequacy ratio approach which in one number would tell ownership, investors, clients, counter parties and regulators how secure and protected an institution was to future challenges in credit, treasury, currency, equity and human capital markets. It was not that the cost of doing business as a financial institution had suddenly gone up because of increased volatility and the resulting additional capital requirements. … Risk management emerged as a valuable tool to measure, monitor and manage capital adequacy for stakeholders and regulators. … Risk management and capital adequacy ratios are not about increasing the cost of doing business. Rather just like a good accounting standard, they are about spreading and recognizing the cost of bad bets over the base responsible for generating them rather than deferring such costs indefinitely for future generations to bear." (Farid, 2005)

Very controversial question about Basel I was connected with a uniform risk weight 100% for commercial loans in private sector. It means that capital requirement for a loan of supranational company with rating AAA is exactly equal to capital requirement for equally large loan of small non-quoted developing company. Result is that the aggressively governed banks can try to move their loan portfolio towards debtors with higher risk while carefully governed banks are not rewarded for their cautiousness. (Jílek, 2000)

Basel I does not either state any rules for valuation adjustments for loans, i.e. for creating valuation adjustments with respect to estimate of current loans evaluation. Basel I is

based on idea of "recognizable deterioration in the assets quality". This concept is in principle subjective and hence signifies considerable discretion in creating valuation adjustments. Setting the rules is left for national banking supervision. Valuation adjustments with respect to the deterioration in the assets quality are called "specific reserves", which cannot be included in capital used for capital adequacy.

On the other hand, Basel I denotes so called "general reserves" as reserves which are not in any manner allocated to a deterioration of any group of assets and therefore are able to cover losses which are not currently possible to identify. These "general reserves" can be included in capital of *tier 2*. Really different concept of national banking supervisions, accounting practices, fiscal incentives and different legal forms were reflected in considerable differences in creating reserves. From standpoint of banking supervision a very variable concept of creating reserves causes that the idea of capital adequacy as a heart of financial institution regulation is in danger. But it is good to mention that an average annual creation of valuation adjustments and reserves in developed countries does not mostly surpass 1% of assets value.

After publishing the Basel I there was an endeavor to supplement the capital adequacy in purpose to include a market risk. This task was increasingly important with respect to the fact that banks were, except the traditional credit and deposit activities, more engaged in trading and that several huge havocs took place e.g. collapse of British commercial bank Barings. The Committee published a first proposal for measuring market risk in 1993. It immediately caused a resistance wave. The proposal for example did not take into account a compensation of operations and related risks compensation, slack handled options etc. Bankers also objected that banks with a well governed risk were forced to perform additional and less exact computations according to Basel committee requirements.

According to Basel framework the purpose of management of the market risk is to limit the losses from this risk arising from the changes of prices, exchange rates and fees on the financial market. Market risk involves interest, exchange rate, share and other kinds of risks related with the movement of market prices. Bank must have such system of the measurement and monitoring of the market risks which corresponds with the scope of bank's activities, underpins all significant sources of the market risks and evaluates the impact of the

market price changes on the returns and costs of the bank. This system must as well assess the value of bank's assets and liabilities in order to provide an unbiased image of the risk size. Bank particularly creates a framework of limits for the market risk management and pursues stress tests to judge the impacts of extremely unfavorable market conditions for the bank. (CNB, 2005)

In 1995 Basel committee released a new proposal of market risk measuring – Planned supplement to the capital accord to incorporate market risk. Contrary to the previous proposal this one removed shortcomings with option treatment and enabled banks right of choice. They could use either standard method based on a building blocks, according to which capital requirements resulting from individual market risk categories are basically piled up, or internal banking models. In January 1996 the Committee published Amendment to the capital accord separating trading book from credit risk and incorporating it into market risks. By this time, shortcomings with the original accord's treatment of credit risk were becoming evident. The simple system of risk weightings provided an incentive for banks to hold the 0% risk-weighted debt of G-10 governments, a fact viewed with some cynicism, since those same governments were largely responsible for the original accord. However, such debt tended to be unprofitable.

Far more profitable for banks was a corporate debt, which was weighted 100%. With all corporate debt being weighted equally, it made sense for banks to hold the most risky corporate debt. Higher quality corporate debt incurred exactly the same capital charges but was less profitable. During this period, markets for credit derivatives and securitizations grew explosively. It was an open secret that banks were employing these to take advantage of shortcomings in the 1988 Accord's crude system of risk weights. This practice is called regulatory arbitrage (see separate chapter). (Jílek, 2000)

In June 1999 there was an innovative proposal adding two more pillars to the framework (see Table 7); banks were also allowed to use external data for evaluating quality of their assets (thereinafter standardized method) or to use their own system of internal rating. Moreover capital requirement to an operational risk was defined.

Capital adequacy framework from June 1999 was being revised which meant an extensive consultative process set in train in all member countries and the proposals were also circulated to supervisory authorities worldwide[12].

Table 5 **Timeline of Basel II**

July 1988	Publication of Basel I
End of 1992	Deadline for implementation of Basel I
June 1999	First Consultative Paper on Basel II, setting out broad overview proposals
January 2001	Second Consultative Paper on Basel II, providing detailed proposals
Since April 2001	Several Quantitative Impact Studies (QIS) to assess the impact of the proposal on a wide range of
April 2003	Third and final Consultative Paper, consultation period until end of July 2003
May 2003	Publication of QIS 3 results
Q4 / 2003	Publication of final version of Basel II
2003 – 2007	In the European Union (EU), process to implement Basel II into EU law ("CAD III" process)
Beginning of 2006	One-year transition period starts
End of 2006	Implementation of Basel II to take effect in member countries

Source: Credit Suisse Economic&Policy Consulting: Basel II Implications for Banks and Banking Markets; Zurich July 2003

Table 6 **Capital and Capital Adequacy Indicators for Czech Banking Sector**

	1998	1999	2000	2001	2002	2003	2004	2005
Capital (in CZK bn)	126.0	133.2	124.2	132.3	131.3	143.7	146.7	167.1
Capital requirements for banking portfolio (in CZK bn)	x	x	62.0	63.3	68.6	73.8	86.3	105.2
Capital requirements for trading portfolio (in CZK bn)	x	x	4.9	5.5	5.2	5.6	7.2	7.5
Capital adequacy in %	12.1	13.6	14.9	15.4	14.2	14.48	12.55	11.87

Note: For banks with valid licenses as of December 31 each year; branches abroad included and Konsolidační banka (or ČKA) excluded

Source: Czech National Bank

Slight decrease of the capital adequacy in the Czech banking sector from 12.55% in 2004 to 11.87% in 2005 was caused especially by higher capital requirements due to the dynamic increase of the credit issuance. Capital adequacy of the Tier 1 decreased from 11.0% to 9.4%. Decrease for both overall and Tier 1 capital adequacy was recorded in all groups of banks, but during 2005 all Czech banks were meeting required regulatory minimum of 8%. Model analysis made by Czech National Bank verified sensitivity of the banks to credit,

[12] Additional proposals for consultation in January 2001 and April 2003 furthermore conducted three quantitative impact studies related to its proposals. As a result of these efforts, many valuable improvements have been made to the original proposals.

currency and interest risk. In addition stress tests have been extended by the analysis of the risk of interbank contagion and by analysis of the impact of the alternative macroeconomic scenarios using macroeconomic model of the credit risk. Banking sector as a whole passed the tests with the capital adequacy above 8%. Regarding to the fact that new concept of Basel II probably leads to the decrease of the total capital adequacy of the Czech banks; the adequate creation of the capital is becoming a new challenge for banks under the conditions of fast increase of the new credit issuance. (CNB, 2006)

4 New Rules Arising from Basel II Accord

In April 2003, BCBS released its third – and final - consultative paper on the New Basel Capital Accord[13], which is meant to replace the 1988 capital adequacy framework by a more risk-sensitive approach. One year later, on June 26, 2004, central bank governors and the head of bank supervisory authorities from the G-10 countries endorsed the new framework commonly known as Basel II or Basel II Accord. To sum up, some 12 years elapsed before the first text of the revised standard was released for consultation in June 1999 and another five before the final text of Basel II. Implementation of the new framework in member jurisdictions is expected at year-end 2006, though some advanced approaches to risk measurement may only become available at year-end 2007.

Basel II keeps the definition of capital and the critical 8% ratio of capital to risk-weighted assets originally set in Basel I. However, it allows banks to implement more sophisticated methods of measuring and assessing the risk-weighting of loans and other assets than at present. For all kinds of the risk (market, credit, operational), there are several methods of the capital requirements calculation; Basel II recognizes two approaches for calculating regulatory capital for credit risk, the so-called “standardized approach” (less sophisticate) and “internal ratings based approach” (IRB).

Goals of Basel II Framework are accomplished through the introduction of “three pillars” that reinforce each other and that create incentives for banks to enhance the quality of their control processes. In the other words the approach "one-size-fits-all” of Basel I is replaced by the three-pillar framework that is designed to implement an advanced, more risk-sensitive and precise approach to capital measurement as well as provide robust regimes for supervisory monitoring and market disclosure. Best attention has been so far paid to the first pillar which regulates the methodology of calculation of capital requirements to the individual risk types. There is no change in methodology of calculation of requirements to market risk. In this way even today’s rules enable use of so called internal models based on calculation of value VaR. However great modification is introducing of advanced methods in the area of

[13] First document called New Basel Capital Accord was released in January 2001

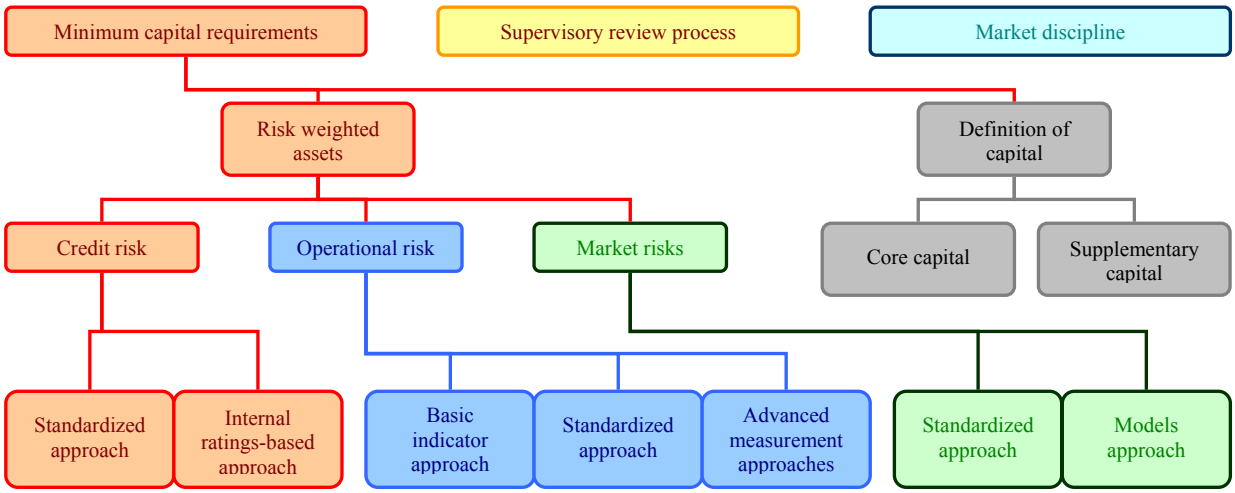
credit risk based on the internal rating and particularly completely new capital requirement to the operational risk.

Table 7 **Three-pillar Scheme of Basel II**

Pillar 1	**Minimum Capital Requirements** • quantification of credit, market and operational risks through increasingly sophisticated approaches to calculation • significant strengthening of the minimum requirements set out in the 1988 Accord
Pillar 2	**Supervisory Review** • supervisory input as a means to review and assess banks' capital adequacy and risk assessment processes
Pillar 3	**Market Discipline** • stringent requirements for public disclosure designed to inform the market of banks' capital adequacy practices • innovative additions to capital supervision

Source: Bank for International Settlements: Basel II: International Convergence of Capital Measurement and Capital Standards: a Revised Framework; Basel Committee Publication, June 2004

Table 8 **Divisions of the Basel Pillars**

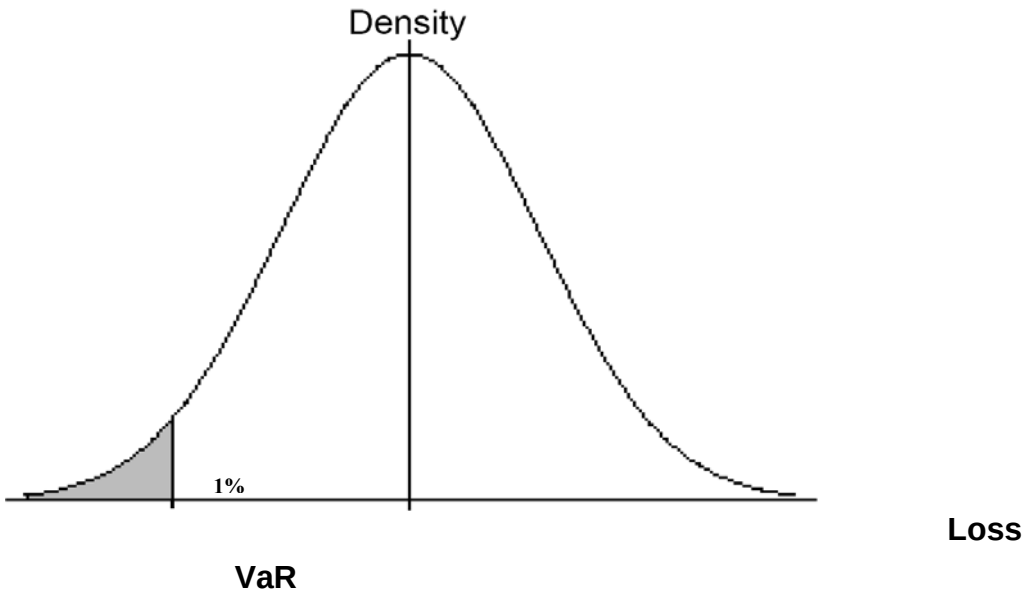


Source: Bank for International Settlements: Basel II: International Convergence of Capital Measurement and Capital Standards: a Revised Framework; Basel Committee Publication, June 2004

While the original capital adequacy set number of relatively simple rules for requirements calculation, Basel II waives exact rules and focuses more on ensuring that internal risk management procedures have been congenial. In this way we concern the extension of tendencies initiated from earlier proposals which allowed for internal models of value-at-risk (VaR) for market risk. Bank risk management usually require that VaR be

calculated as a 99%-quantile of loss over a two-week horizon[14]. This means that the market value of a portfolio of assets, here trading book, is likely to decrease by this VaR measure (a number) or less over next two weeks with a probability of 99% or will decrease by more than VaR with a probability of 1%, i.e. 100%-99% within two weeks.

Value-at-risk as a Quantile of the Loss Distribution



Source: Studer, G.: Value At Risk and Maximum Loss Optimization; RiskLab technical report, December 1995

Well sophisticated banks will be able to use their own internal assessments of borrower creditworthiness to establish credit risk, which will result in greater risk-sensitivity. Banks will make calculations based on four risk components: probability of default (PD), expected loss (EL), exposure at default (EAD), and loss given default (LGD). The foundation IRB Approach uses banks' own estimates of PD but employs supervisory figures for EL, EAD and LGD; the advanced IRB Approach allows banks to use their own estimates of each risk component, resulting in more finely-tuned risk-weights for individual loans. There are strict supervisory systems and disclosure criteria that must be met before supervisory approval to use the IRB approach is granted and banks are required to hold at least three-year historical data to support their calculations. The corporates that have developed long-standing relationships with their banks are likely to succeed under the IRB approach; less favored or unrated corporates may be well advised to unite their banking relationships in the very near

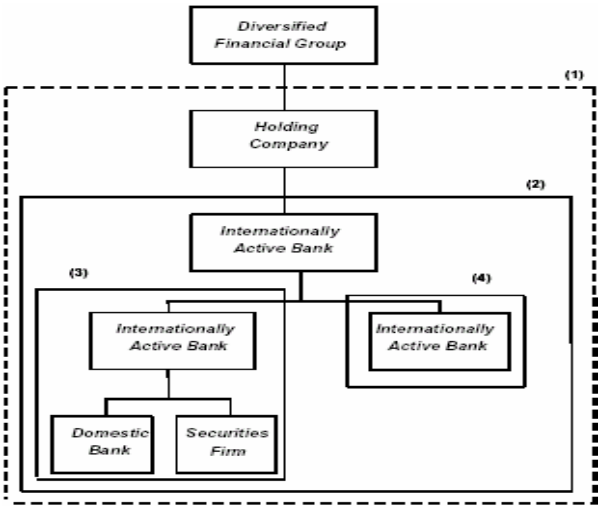
[14] In 1995 BCBS implemented market risk capital requirements for banks based upon a crude VaR measure, but the Committee also approved, as an alternative, the use of banks' own proprietary VaR measures under certain concitions.

future, preferably with those banks planning to use the most advanced approaches. (McCaw, 2006)

Meaningful changes are related to risk management advances, especially credit risk measurement, and application of capital adequacy is extended for bank holdings. Basel II also records new financial innovations such as assets securitization aimed at capital arbitrage, because previous constructions of capital adequacy were becoming less effective and more weakly indicating financial situation of the bank under innovations. Current capital requirements aim to correspond with real risk profile of the banks in order to approach regulatory capital to economic capital.

The Framework will be applied on a consolidated basis to internationally active banks and will include any holding company that is the parent entity within a banking group to ensure that it captures the risk of the whole banking group. New concept of capital adequacy is regarded as the most important change on field of financial institution regulation during last decades. The main difference from Basel I is an effort to maximize an approximation of minimum regulatory capital to the real economic need for capital based on concrete risk positions of the bank. These goals can be reached only at the cost of giving up today's rather simple, but too generalizing methodology (especially in the area of credit risk) of capital adequacy calculation, and introduction of advanced, but considerably more complicated approaches truly reflecting the essence of risk profile of the regulated subject.

Illustration of the New Scope of Application of this Framework



(1) Boundary of predominant banking group. The Framework is to be applied at this level on a consolidated basis, i.e. up to holding company level. **(2), (3)** and **(4)** : the Framework is also to be applied at lower levels to all internationally active banks on a consolidated basis.

Source: Bank for International Settlements: Basel II: International Convergence of Capital Measurement and Capital Standards: a Revised Framework; Basel Committee Publication, June 2004

Useful measurement of the capital adequacy must solve particularly the following situations:

- Different banking products represent different size of risk (credits versus guarantees)
- Risks of the bank's customers differ (governments of the developing countries versus governments of G8)
- Different qualities of the securities (government guarantee versus promissory note of the debtor)
- Risk of the debt rises when time passes (long-term credit versus short-term credit)

Simplified equation for the capital adequacy according to Basel II can specify in the denominator measure of three components of banking risks and substitute current risk-weighted assets:

$$CAD = \frac{capital}{capital\ requirment\ to\ credit, market\ and\ operational\ risks} > 8\%$$

IRB is the alternative methodology for calculating regulatory capital for credit risk which would allow banks to use their internal rating systems and it is subject to the explicit approval of the bank's supervisor. Basel II is therefore a concept which can finally liberate the banks. The methods are purposely designed so that advanced approaches use leads to lower total capital requirements. Banks are directly motivated for application of advanced, more sophisticate methods of risk management. New concept is therefore viewed as an opportunity to lower a demand for the capital of the banks portfolio. For those banks which still have not introduced the advanced system of risk measurement and management, especially in the credit and operational risk area, the new concept is first of all an opportunity to create such a system. Functional modern system of risk management is becoming an important competitive factor and in a long run it is a necessary presumption for the bank's survival.

Table 9 **Basic Parameters and Differences among Individual Methods of Setting Capital Requirements to Operational risk According to Basel II**

	Simplified Approach	Standardized Approach	Advanced Measurement Approaches
Calculation of minimum capital requirement	• Based on indicator mean annual gross revenue in last three years • Capital requirement is equal to 15 % of this indicator	• Indicator gross revenue in individual regulatory stated commercial lines • Capital requirement in dependence on commercial line is 12%, 15% or 18% of the indicator value • Total capital requirement consists of sum of capital requirements for individual commercial lines	• Capital requirement is depending on internal calculation based on: - internal data on losses - external data on losses - analyses of risk scenarios - factors of commercial environment and internal controls • Option to use approaches to lower the risk (by as much as 20 %)
Criteria for the method use	• There are no stated criteria • Concordance with "Sound Practices for the Management and Supervision of Operational Risk" released by Basel Committee is recommended	• Active engagement of Board and upper management • Existence of function of operational risk management • Fair system of operational risk management • Systematic monitoring of data on losses	• Same as for the standardized approach, and further: • Measurement is integrated to everyday process of risk management • Processes of operational risk management and measurement are controlled by internal and external auditor • Many quantitative requirements – especially to historic data (3-5 years backwards)

Source: Internet magazine IT SYSTEM 3/2004 – Trendy on www.systemonline.cz

For the purpose of calculation of capital requirements for interest, securities, currency and commodity positions BASEL II distinguishes between a banking book and trading book. According to BASEL II trading book is defined as a portfolio of own positions with financial

instruments which the bank holds in order to sell in short horizon or which the bank opened to realize profit from expected changes between the purchase and selling prices or from the other price or interest changes. Included there are also the instruments of matching trading and bank's acting as a market-maker and instruments adopted in order to hedge the other parts of the trading book. All the other instruments represent a banking book.

For many large banks the trading book is still relatively small compared to the banking book, its increasing fraction is nevertheless evoking that regulatory authorities lay bigger emphasis on the market risk of trading book.

From concept of credit risk measure according to Basel I those debt and stock securities are excluded from the trading book which original capital requirement to credit risk based on risk-weighted assets is replaced by capital requirement to specific interest and specific equity risk. This new requirement is applied only for the trading book and the requirements to the currency and commodity risk are applied for both books. It results from the philosophy that every independent risk should be covered by certain "cushion" of capital. Consistently with Basel I it is stated that this capital adequacy should be determined on worldwide consolidated basis. Basel II also appeared from principle that market risk measures were useful not only in case of banks, but also of investment companies. BCBS preferred capital requirements from limits, because the capital requirements provide bank directors discretion in risk management. National banking supervision can impose the limits.

Basel II allows for a speculation within trade book as far as there exists a capital to cover potential losses from this speculation. The fact that bank must hold capital to cover the market risk makes speculation expensive. Aims of Basel II are equal to those of Basel I. Daily monitoring of capital adequacy is expected.

Capital requirement to market risk is more volatile than to credit risk and therefore there was enabled a more flexible and "less quality type of regulatory capital denoted as *tier 3*. It consists of a short-term subordinated debt and net profit of trading book. Short-term subordinated debt must possess a lock-in clause which states that neither principal nor interest would be possible to pay off (not even at maturity) if such repayment meant that capital intended for trading book risk cover decreased below some marginal level, which is equivalent to decrease of capital adequacy below some marginal level e.g. 8%.

Tier 3 can be used only to cover market risk capital requirements. For instance it cannot be used to cover capital requirements for credit risk of derivatives connected with partner's default. But it can be used to cover capital requirements for credit risk of derivatives connected with default of an issuer of underlying instrument. Size of the *tier 3* is limited to 250% of *tier 1* plus *tier 2*, which are allocated to cover market risks. It means that 28.6% minimum of the market risk must be covered with *tier 1* plus *tier 2*, which remain to cover the market risk. Further *tier 2* + *tier 3* ≤ *tier 1*. This last condition need not hold if the country decides so. Also decision whether to use a short-term subordinated debt for individual banks or for whole banking system is up to the national banking supervision.

4.1 Calculation of Minimum Capital Requirements

The principal form of eligible capital to cover market risks consists of shareholders' equity and retained earnings (Tier 1 capital) and supplementary capital (Tier 2 capital) as defined in the 1988 Accord. But banks may also, at the discretion of their national authority, employ a third tier of capital ("Tier 3"), consisting of short-term subordinated debt. Calculation is made for the *total minimum capital requirements for credit, market and operational risk*. The capital ratio is calculated using the definition of regulatory capital (instruments eligible for inclusion in Tier 1 capital) and risk-weighted assets. The total capital ratio must be no lower than 8 %. Tier 2 capital is limited to 100 % of Tier 1 capital. Under the *standardized approach* to credit risk, general provisions can be included in Tier 2 capital subject to the limit of 1.25 % of risk weighted assets. Under the *IRB approach*, the treatment of the 1988 Accord to include general provisions (or general loan-loss reserves) in Tier 2 capital is withdrawn.

Capital adequacy (CAD) according to Basel II is defined as ratio of capital tier 1 plus tier 2 minus deductible items plus used tier 3 to capital requirements A and B. This ratio is multiplied by 8%:

$$CAD = \frac{tier\,1 + tier\,2 - DI + tier\,3_{used}}{A + B} * 8\%$$

$$while \quad CAD \geq 8\% \quad must\ hold\,.$$

Capital requirement A reflects capital requirement for credit risk (= 0.08 * RWA) and capital requirement B is for market risk. Minimal level of ca is 8% and it is required in the end of every working day (reported usually monthly to banking supervision). If we plug 0.08 * RWA for A, 0 for B and 0 for tier 3_{used}, we will get the formula of Basel I capital adequacy.

Capital adequacy of unused capital can be defined as following:

$$CAD_{unused\ \ tier\,3} = \frac{tier\,3_{unused}}{A + B} * 8\%$$

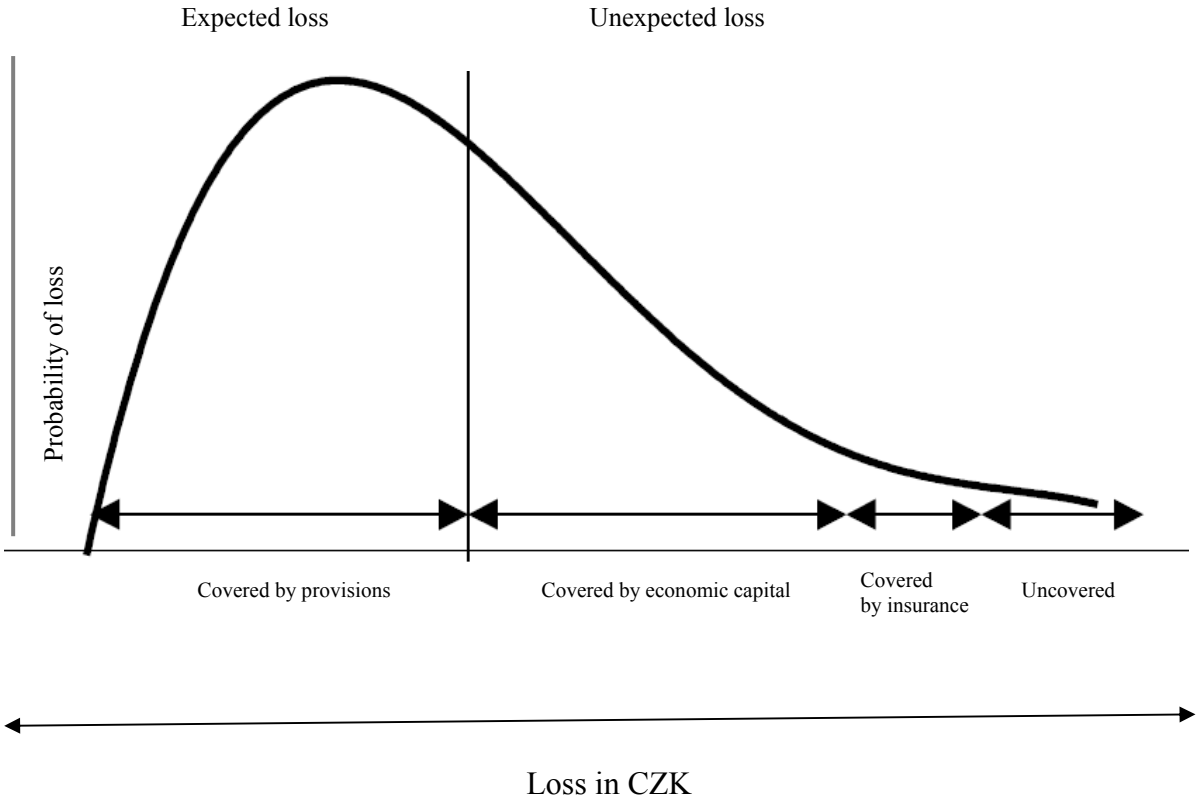
Market risk can be determined by the standardized method or by internal models of the bank. Possibility to use the internal models (not centrally set) is a substantial innovation and a breakout to a banking supervision concept. Such models are usually tailor-made for a particular bank conditions and banks use them for asset and liabilities management.

Banks should generally attribute total general provisions on a pro rata basis according to the proportion of credit risk-weighted assets subject to the standardized and IRB approaches. However, when one approach to determining credit risk-weighted assets (i.e. standardized or IRB approach) is used exclusively within an entity, general provisions booked within the entity using the standardized approach may be attributed to the standardized treatment. Similarly, general provisions booked within entities using the IRB approach may be attributed to the total eligible provisions.

Banks using the IRB approach for securitization exposures or the PD/LGD (Probability of default/Loss given default) approach for equity exposures must first deduct the expected loss amounts. Banks using the IRB approach for other asset classes must compare (i) the amount of total eligible provisions, defined as the sum of all provisions (e.g. specific provisions, partial write-offs, portfolio-specific general provisions such as country risk provisions or general provisions) that are attributed to exposures treated under the IRB approach, with (ii) the total expected losses amount as calculated within the IRB approach. Where the total expected loss amount exceeds total eligible provisions, banks must deduct the difference. Deduction must be on the basis of 50 % from Tier 1 and 50 % from Tier 2. Where the total expected loss amount is less than total eligible provisions, banks may recognize the

difference in Tier 2 capital up to a maximum of 0.6 % of credit risk-weighted assets. At national discretion, limit lower than 0.6 % may be applied.

Expected vs. Unexpected Loss



Source: Neprašová, M.: Měření kreditního rizika pro potřeby určení kapitálového požadavku a ekonomického kapitálu; disertační práce IES 2003

Total risk-weighted assets are determined by multiplying the capital requirements for market risk and operational risk by 12.5 (i.e. the reciprocal of the minimum capital ratio of 8 %) and adding the resulting figures to the sum of risk-weighted assets for credit risk. The Committee will review the calibration of the Framework prior to its implementation. It may apply a scaling factor in order to broadly maintain the aggregate level of minimum capital requirements, while also providing incentives to adopt the more advanced risk-sensitive approaches of the Framework. The scaling factor is applied to the risk-weighted asset amounts for credit risk assessed under the IRB approach. There will be also transitional arrangements for banks using the IRB approach for credit risk or the Advanced Measurement Approaches (AMA) for operational risk - a capital floor.

4.2 Credit Risk – The Standardized Approach for Individual Claims

One of the two alternatives to measure credit risk is in a standardized manner, supported by external credit assessments. The standardized approach is essentially a more risk-sensitive revision of the single approach to measuring credit risk available under Basel I. The Basel I approach allocates a set risk-weight to each asset dependent upon the broad category of borrower (e.g. sovereign, bank, corporate). In determining the risk weights in the standardized approach, banks may use assessments by external credit assessment institutions recognized as eligible for capital purposes by national supervisors. Exposures should be risk-weighted net of specific provisions. Four risk weights for corporate exposures will be available under the standardized approach: 20%, 50%, 100% and 150%, refined by reference to the external rating. (BCBS, 2004)

- Claims on sovereigns and their central banks will be risk weighted as follows:

Credit Assessment	**AAA to AA-**	**A+ to A-**	**BBB+ to BBB-**	**BB+ to B-**	**Below B-**	**Unrated**
Risk Weight	0 %	20 %	50 %	100 %	150 %	100 %

At national discretion, a lower risk weight may be applied to banks' exposures to their sovereign (or central bank) of incorporation denominated in domestic currency and funded in that currency. Where this discretion is exercised, other national supervisory authorities may also permit their banks to apply the same risk weight to domestic currency exposures to this sovereign (or central bank) funded in that currency.

- Claims on non-central government public sector entities (PSEs):

Claims on domestic PSEs will be risk-weighted at national discretion, according to either option 1 or option 2 for claims on banks. When option 2 is selected, it is to be applied without the use of the preferential treatment for short-term claims. Subject to national discretion, claims on certain domestic PSEs may also be treated as claims on the sovereigns in whose jurisdictions the PSEs are established. Where this discretion is exercised, other national supervisors may allow their banks to risk weight claims on such PSEs in the same manner.

- Claims on multilateral development banks (MDBs):

The risk weights applied to claims on MDBs will generally be based on external credit assessments as set out under option 2 for claims on banks but without the possibility of using the preferential treatment for short-term claims. A 0% risk weight will be applied to claims on highly rated MDBs that fulfill to the Committee's satisfaction criteria. The Committee will continue to evaluate eligibility on a case-by-case basis.

- Claims on banks:

There are two options for claims on banks. National supervisors will apply one option to all banks in their jurisdiction. No claim on an unrated bank may receive a risk weight lower than that applied to claims on its sovereign of incorporation. Under the first option, all banks incorporated in a given country will be assigned a risk weight one category less favorable than that assigned to claims on the sovereign of that country. However, for claims on banks in countries with sovereigns rated BB+ to B- and on banks in unrated countries the risk weight will be capped at 100 %. The second option bases the risk weighting on the external credit assessment of the bank itself with claims on unrated banks being risk-weighted at 50 %. Under this option, a preferential risk weight that is one category more favorable may be applied to claims with an original maturity of three months or less, subject to a floor of 20 %. This treatment will be available to both rated and unrated banks, but not to banks risk weighted at 150 %. The two options are summarized in the tables below.

Option 1

Credit Assessment of Sovereign	**AAA to AA-**	**A+ to A-**	**BBB+ to BBB-**	**BB+ to B-**	**Below B-**	**Unrated**
Risk Weight under Option 1	20 %	50 %	100 %	100 %	150 %	100 %

Option 2

Credit Assessment of Banks	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Risk Weight under Option 2	20 %	50 %	50 %	100 %	150 %	50 %
Risk Weight for short-term claims under Option 2	20 %	20 %	20 %	50 %	150 %	20 %

When the national supervisor has chosen to apply the preferential treatment for claims on the sovereign, it can also assign, under both options 1 and 2, a risk weight that is one category less favorable than that assigned to claims on the sovereign, subject to a floor of 20 %, to claims on banks of an original maturity of 3 months or less denominated and funded in the domestic currency.

- Claims on securities firms:

Claims on securities firms may be treated as claims on banks provided these firms are subject to supervisory and regulatory arrangements comparable to those under this Framework (including, in particular, risk-based capital requirements). Otherwise such claims would follow the rules for claims on corporate.

- Claims on corporate:

The table provided below illustrates the risk weighting of rated corporate claims, including claims on insurance companies. The standard risk weight for unrated claims on corporate will be 100%. No claim on an unrated corporate may be given a risk weight preferential to that assigned to its sovereign of incorporation.

Credit Assessment	AAA to AA-	A+ to A-	BBB+ to BB-	Below BB-	Unrated
Risk Weight	20 %	50 %	100 %	150 %	100 %

Supervisory authorities should increase the standard risk weight for unrated claims when they judge that a higher risk weight is warranted by the overall default experience in their jurisdiction. As part of the supervisory review process, supervisors may also consider whether the credit quality of corporate claims held by individual banks should warrant a standard risk weight higher than 100 %. At national discretion, supervisory authorities may permit banks to risk weight all corporate claims at 100 % without regard to external ratings.

Where this discretion is exercised by the supervisor, it must ensure that banks apply a single consistent approach, i.e. either to use ratings wherever available or not at all. To prevent "cherry-picking" of external ratings, banks should obtain supervisory approval before utilizing this option to risk weight all corporate claims at 100 %.

- Past due loans:

The unsecured portion of any loan (other than a qualifying residential mortgage loan) that is past due for more than 90 days, net of specific provisions (including partial write-offs), will be risk-weighted as follows:

- 150 % risk weight when specific provisions are less than 20% of the outstanding amount of the loan;
- 100 % risk weight when specific provisions are no less than 20% of the outstanding amount of the loan;
- 100% risk weight when specific provisions are no less than 50% of the outstanding amount of the loan, but with supervisory discretion to reduce the risk weight to 50%.

To demonstrate the sensitivity of the standardized approach, the calculation of the capital requirement for a loan to an AAA-rated corporate with corresponding risk weight 20% and an unrated corporate with corresponding risk weight 150% will be as follows:

Exposure amount (100) x Risk Weight (20%) x Capital Ratio (8%) = Capital Requirement (1.6)

Exposure amount (100) x Risk Weight (150%) x Capital Ratio (8%) = Capital Requirement (12)

- External credit assessments

The standardized approach uses external ratings such as those provided by "external credit assessment institutions" (ECAIs)[15] to determine risk-weights for capital charges, whereas the IRB allows banks to develop their own internal ratings for risk-weighting purposes subject to the meeting of specific criteria and supervisory approval. While large internationally active banks should opt for the IRB, the vast majority of small and medium-

sized credit institutions from the G-10 are expected to adopt the simpler standardized approach. Outside the G-10, the standardized approach will also be the one preferred by most banks moving to Basel II given their accounting and information (e.g. lack of data) weaknesses[16].

„It is apparent that the Standardized Approach links corporates' cost of borrowing inextricably to their credit ratings, a somewhat vulnerable position when considered against the recent market backdrop of corporate scandals and potential rating downgrades. Given the current climate of corporate responsibility, pressure is placed on both borrowers and lenders to adopt ever more prudent practices. More highly rated corporate borrowing will result in lower capital requirements for the lender; conversely, a weaker corporate credit profile will increase the cost of lending. This corporate 'credit crunch' reflects in a nutshell the very essence of Basel II: to make the capital applied to lending more risk-sensitive.“ (McCaw, 2005)

In July 2005 BCBS together with the International Organization of Securities Commissions (IOSCO) issued a paper[17] setting capital requirements for banks' exposures to certain trading activities, including counterparty credit risk, and for the treatment of double default effects, i.e. the risk that both a borrower and guarantor default on the same obligation. The rules address following issues:

- Treatment of counterparty credit risk for over-the-counter derivatives, repurchase agreements and securities financing transactions, and of cross-product netting arrangements;
- Treatment of double-default effects for covered exposures, relating to the trading book and banking book;
- Short-term maturity adjustment, in the internal ratings-based approach under Basel II, for some trading book-related items;
- Improvements to the current trading book regime, especially with respect to the treatment of specific risks; and
- The design of a specific capital treatment for unsettled and failed transactions.

[15] The term “external credit assessment institutions” refers to credit rating agencies and export credit agencies.
[16] Some developing countries like China and India have already announced that they will not adopt the Basel II framework (The Economist, 2003).
[17] The Application of Basel II to Trading Activities and the treatment of Double Default Effects

Some suggested provisions of Basel II are criticized, e.g. capital requirements to operational risk can outweigh the achieved savings from credit risks. Basel II also gives greater possibilities to the regulators to adapt presenting of the capital adequacy to the local conditions. Regulators namely approve or deny the models used by banks and also may manipulate with the limit of 8%. Some regulators may abuse their position and give a preferential treatment to the banks in their force by having lower requirements than the other regulators. In turn the largest advantage of Basel II is relaxation from the cumbersome computation which is currently same for all the banks. It is possible to choose the method which is the best for the bank.

The existing experience from the testing regime shows that banks which will use the more sophisticated measurements, will benefit. That is they will achieve their savings (and increase the profits) by investing more financial resources which they currently have to hold in some liquid appearance. This may happen when the approved model of the risk measurement will entitle the bank to lower ratio of liquid assets in the balance sheet than within the original circumstances. Application of the more sophisticated methods is not possible without appropriate infrastructure of data processing. Testing regime showed that banks had to estimate many variables for the calculation because they did not have the relevant data. In addition in some cases banks will have to prove as much as seven years history of some indicators, e.g. for the calculation of the probability of default of the adverse party.

To conclude, Basel II substantially extends the management of credit risk. It also presents a completely new framework for operational risk and the treatment of securitization. With the IRB approach, Basel II allows the banks to develop their own systems for calculating expected default in payments. Under Basel I it was only possible to distinguish between the asset categories to a certain degree. Subsequently, the possibility for optimizing the use of capital was also restricted. Under Basel II, the use of ratings from external credit rating agencies is permitted for the first time for calculation of risk-weighted assets. However the effort to tie the capital requirements more closely to risk and promote a disciplined approach to risk management, though largely successful, leaves a lot of room for improvement. For details see subchapter Basel II Shortcomings.

5 Impact of Basel II on Banks

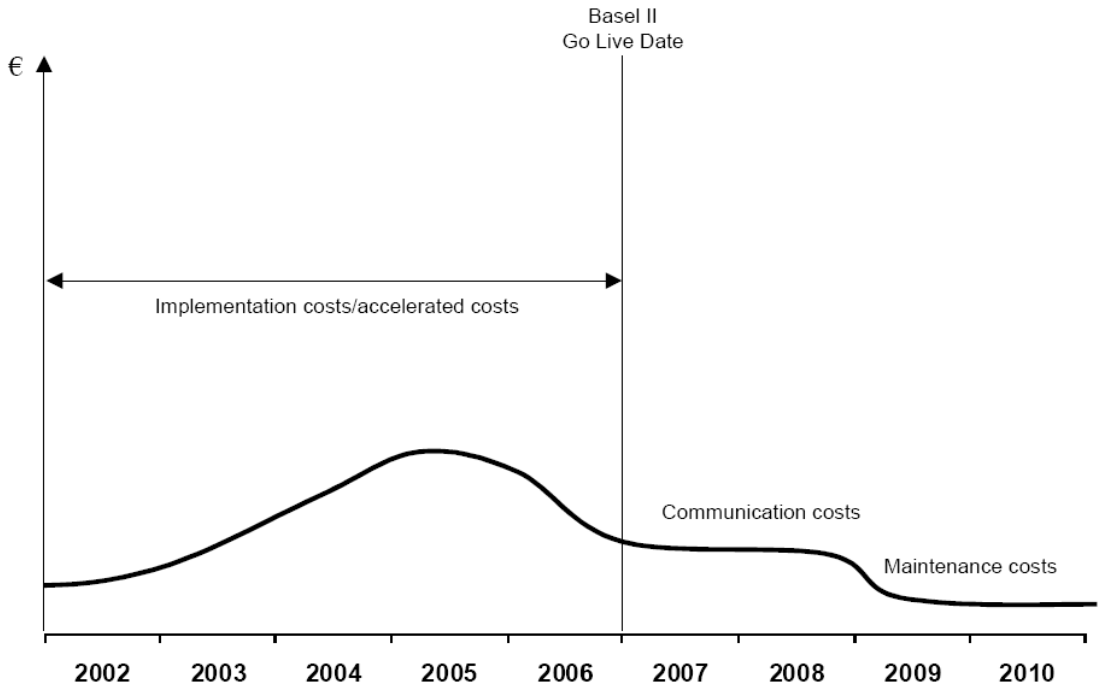
The overall minimum capital requirements are intended to remain unchanged on average. Among banks there may however be a redistribution of capital according to actual risk profiles and business activities. The BCBS has studied the potential impact of the Basel II framework by means of several quantitative impact studies (see Chapter 5.2) carried out prior to the finalization of the framework. The results of these analyses may lead the BCBS to fine-tune some of the framework's technical parameters. The potential impact of the Basel II framework in the EU was analyzed in the "Barcelona Report". (PriceWaterhouseCoopers, 2004) It concluded that the Basel II framework may reduce the overall capital requirements for banks in the EU 15 by around 5%. Moreover, there is likely to be a redistribution of regulatory capital requirements among banks and between banking systems across countries.

Many banks have launched investment programs that anticipate the regulatory requirements of the Basel Accord. Basel has acted as an accelerator for the development of internal risk management processes that are already in train, rather than simply being a wholly regulatory imposition. It is difficult, if not impossible, to determine costs and effects (including loan pricing) that can be unambiguously attributed to Basel. Compliance with the Basel Accord has, however, distorted some investment priorities and the qualitative requirements of regulators will in-crease implementation costs. The implementation effort will also crowd out other developments that might otherwise have occurred.

Despite of the difficulties with measurement of the Basel II costs, PriceWaterhouseCoopers (2004) study estimated that Basel II implementation costs after taxation will average € 4-6 bn per year for the EU between 2002 and 2006; the total post-tax cost up to 2006 could be as much as € 20-30 bn. However a portion of the implementation costs required to develop the risk management processes are not driven solely by Basel II requirements; they would have been incurred as a result of improving credit risk systems or operational risk management to achieve competitive advantage, irrespective of Basel developments – although perhaps over a considerably longer time period. The main components of implementation costs are IT systems and data collection costs as well as the

costs associated with the design or enhancement of rating systems and related training and change management. In addition, new regulatory reporting systems will have to be developed.

Graph 9 **Costs profile of Basel II Implementation**



Source: PriceWaterhouseCoopers: Study on the financial and macroeconomic consequences of the draft proposed new capital requirements for banks and investment firms in the EU; MARKT/2003/02/F, Final Report 8 April 2004

Graph 9 illustrates the general profile of Basel II-related costs. Some institutions have a staged implementation strategy whereby they plan to evolve from Standard Approach to Foundation IRB or Foundation IRB to Advanced IRB approach over a number of years. Such a practice would spread implementation costs over a longer period, but with a correspondingly lower initial spend.

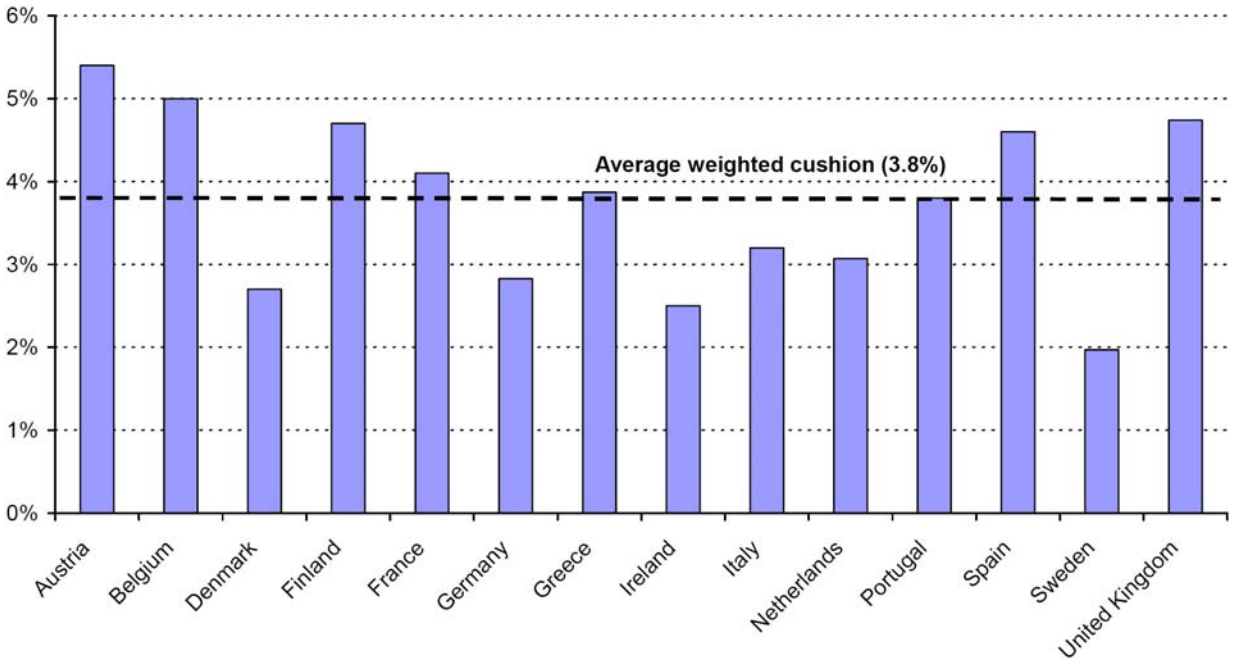
There passed already eighteen years from the introduction of Basle I. The question is whether acceptance of the capital requirements made some banks to achieve, except capital arbitrage, also a higher capital adequacy. Another important think is whether capital requirements did not have any secondary effects. Unsatisfactory capital adequacy can be resolved by raising a regulatory capital (by non-payment of dividends, issuing of securities or issuing of quasi-securities, e.g. in form of a subordinated debt) or reducing a risk weighted assets (by reduction of assets especially with help of lower crediting, transfer of assets from

higher to lower risk weight or by the capital arbitrage such as a securitization). Banks' reaction on the capital requirements depends on the phase of the economic cycle and on the financial situation of the bank. Banks usually choose the most cost-effective way. Subscription of a new capital or non-payment of dividends is easier in period of economic boom while in times of a recession banks prefer lowering credits because default risk of the institutions is high.

Accordingly when the costs of capital *tier 1* are high, banks try to perform capital requirements by issuing capital *tier 2*. In spite of this fact in several countries banks have a more favorable ratio of *tier 1* to *tier 2* than required. Data on impact of Basle Accord are not quite comparable among the countries because of different tax regimes, accounting standards, regulation and culture, Jackson (1999) shows that after introduction of the Basel ratio G-10 countries and some other countries came to a substantial increase of the capital adequacy. Average capital adequacy increased from 9.3% in 1988 to 9.6% in 1992 and to 11.2% in 1996 in G-10 countries. Graph 10 sets out the average capital cushions on a country basis in 2002. The average weighted capital cushion at the end of 2002 was 3.8%, i.e. on average EU banks have a capital ratio of 11.8% which is nearly 50% more capital than the regulatory minimum of 8% (PriceWaterhouseCoopers, 2004).

One of the reasons of this increase is the fact that banking supervisions in some countries (e.g. in Great Britain or United States) set capital adequacy higher than the Basel Committee. Nevertheless it is hard to distinguish whether this increase is a direct consequence of the capital requirements or of the increased market discipline, because introduction of the capital adequacy caused a higher transparency and enhanced possibilities of market to put pressure on its participants (Jackson, 1999). As Basel II is being implemented, the cushions are expected to remain. But, everything else being equal, the cushions are likely to reduce as investors and rating agencies recognize the benefits of strengthened risk management and improved disclosure. The level of cushion will depend on the internal cash generation and risk profiles of the individual institutions (PriceWaterhouseCoopers, 2004). Analysis of the possible impact of the Basel II requirements on the banks' capital adequacy is presented in so called quantitative impact studies (see separate chapter).

Graph 10 **Capital Cushion - Actual Capital Ratio in Excess of 8% Minimum Requirement, in 2002**



Source: PriceWaterhouseCoopers: Study on the financial and macroeconomic consequences of the draft proposed new capital requirements for banks and investment firms in the EU; MARKT/2003/02/F, Final Report 8 April 2004

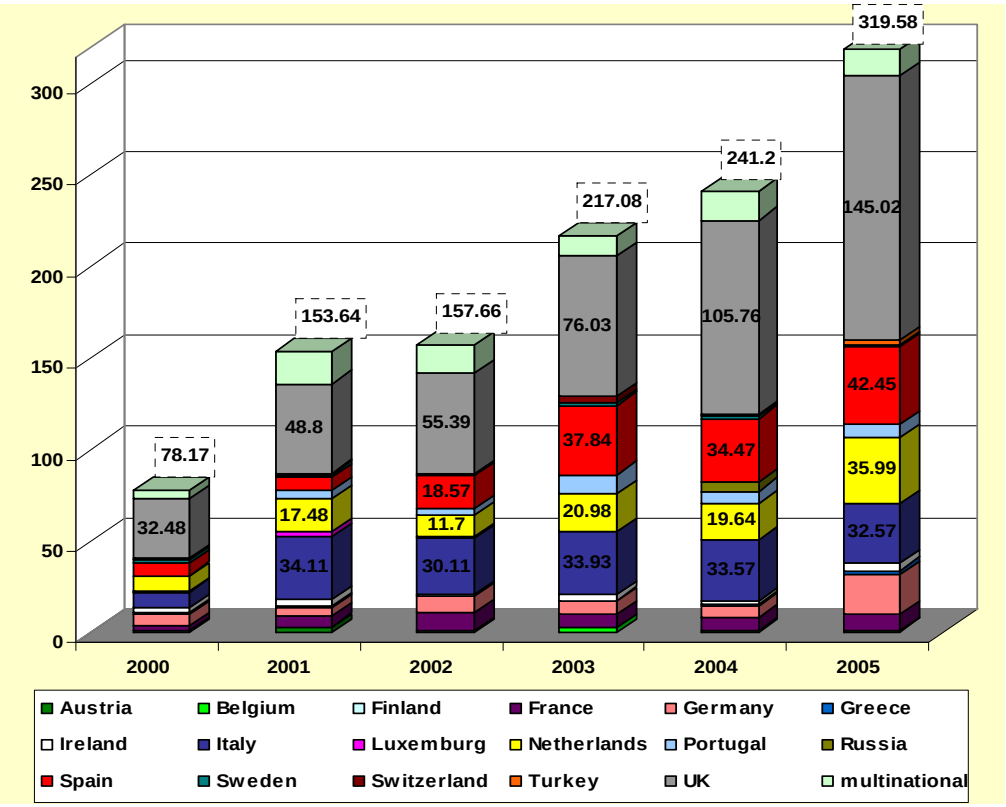
Strict monitoring of capital adequacy of the individual banks substantially declines meaning of the deposits insurance, when the monitoring is daily, present and real capital adequacy are close to each other (banking frauds are cut down) and in case of the decline of capital adequacy under certain security level bank is immediately closed. Then after a fast sell of the assets, termination and dispatch of the off-balance sheet items and satisfaction of liabilities to bank's creditors, bank is left with remaining assets which are possible to divide among the shareholders. It is obvious that insurance of the deposits is useless in that case. (Jílek, 2000)

5.1 Securitization and Regulatory Capital Arbitrage

World financial markets have recently experienced increased securitization. One aspect of this securitization process has been the increase in corporate bond issuance, which has also coincided with a diminishing supply of government bonds in many countries, particularly in the United States, but increasingly also in Europe. Securitization in Europe

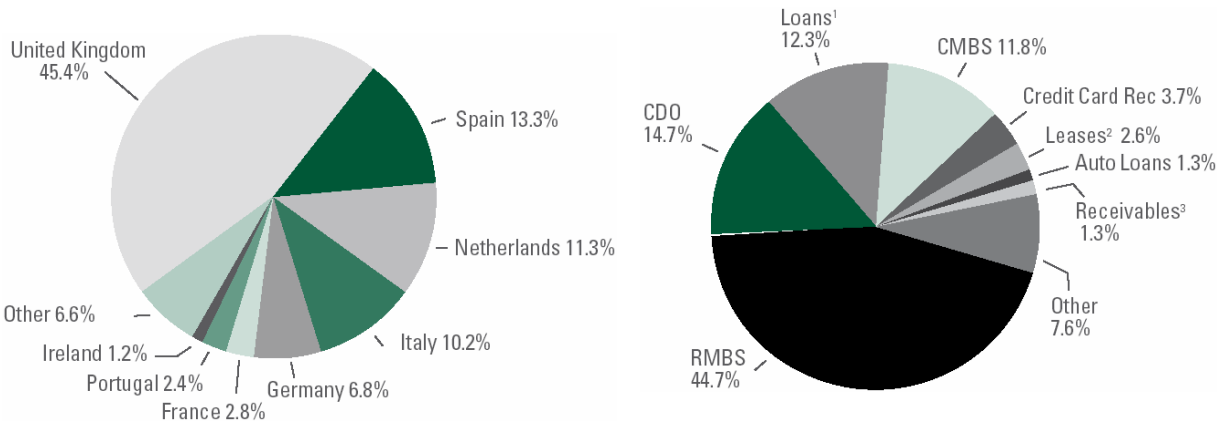
currently reaches highest levels: Demand from investors looking for higher investment-grade yields drove the issuance of European securitization to its highest level last year, according to the latest quarterly report from the European Securitization Forum (ESF, 2006). Issuance reached €319.6 billion in 2005, up 31.1% from the previous year's level of €241.2 billion. Fourth quarter 2005 issuance volume established a new record of €135.7 billion, accounting for nearly 40% of the year's total issuance, led by the mortgage related and collateralized debt obligation (CDO) sectors.

Graph 11 **European Securitization by Country, € billions**



Source: European Securitization Forum: ESF Securitization Data Report; Spring 2002 - Winter 2006

Graph 12 **European Securitized Issuance by Country and by Collateral Type, 2005**



Notes: [1] *Includes leveraged, commercial, consumer, corporate, SBL, and other loans*
[2] *Includes equipment and other leases*
[3] *Includes account, health care, insurance, utility and other receivables*
Source: European Securitization Forum: ESF Securitization Data Report; Winter 2006

On the Graph 11 we can see the development of the European securitization by country between 2000 and 2005. The numbers in the dashed-line frames above the columns represent the total of the issued securities, while the numbers in front of the columns represent issuances higher than €10 billion in the relevant years. Since 2001 Italy, which represents 10.2% of the total European issuance (left half of Graph 12), has pretty stable figures; Netherlands with percentage of 11.2 fluctuates, but since 2000 their issuance increased almost five times with the most significant rise from €19.6 in 2004 to €36 billion in 2005. Spanish issuance totaled €42.5 billion, increasing from €34.5 billion in 2004 and securing Spain's place as second, only behind the UK, in terms of issuance volumes in the European securitized debt markets. The UK continued to dominate issuance in the European securitization market during 2005 with new issues of securitized debt totaling €145.0 billion, an increase of 43.8% on 2004. Another high increase can be seen in Germany between 2004 and 2005, but all the other countries play no big role.

While residential mortgage-backed securities (RMBS) continues to be the largest securitized sector in Europe, with total issuance of €142.6 billion in 2005, representing an increase of 18.7% from 2004, its market share of total issuance decreased from 49% to 44%. This trend was the result of a slower UK housing market; according to the European Mortgage Federation, gross mortgage lending in the UK in 2005 was 3.8% lower than in the

previous year. The ESF report also suggests that mortgage lending volume in the UK could be lower again in 2006, suggesting that overall RMBS growth will be moderate. The CDO sector continued to develop and grow throughout 2005, finishing the year as the second largest volume sector with total issuance of €46.8 billion, an increase of over 85 percent on the 2004 total. The fastest growing product sector in 2005 was CMBS, with issuance volumes reaching €37.7 billion, more than double the total for 2004. The sharp increase in CMBS issuance can be explained by a very favorable commercial real estate market that saw investors easily absorb the supply of new CMBS, characterized by rating stability and above average coupon. Securities backed by credit card receivables increased significantly to €11.7 billion from €6.7 billion in 2004. (ESF, 2006)

The fast development of the European securitization has been partly spurred by the surge in mergers and acquisitions and leveraged buy-outs that has taken place in markets of late, not least in the euro area. Another reason of the rising securitization could be regulatory matters. "Markets are continuing to anticipate the lower capital requirements for senior tranches of securitization and CDO transactions when Basel II is implemented," stated Rick Watson, Managing Director and Head of the ESF. "In addition credit performance remained generally good; the combined effect resulted in an attractive spread environment and continuing need by investors to put their money to work". (ESF, 2006) While the ESF report says tighter fiscal policy and anticipated interest rate rise by the European Central Bank this year might hurt growth as spreads narrow, the lower minimum capital requirements under Basel II to offset risks taken out against higher-grade securities should support the take-up of commercial mortgage-backed securities (CMBS) and CDOs as banks implement the new capital adequacy rules.

"When capital adequacy rules oblige banks to maintain a capital cushion in excess of what they would otherwise choose, banks may start using different methods to make their capital ratio look artificially high relative to the riskiness of their exposures. This phenomenon is commonly referred to as "regulatory capital arbitrage"". (Van Roy, 2005) Any transaction, that has a little or no economic impact on a financial institution while either increasing its capital or decreasing its required capital, can be called a regulatory arbitrage. Just like trading arbitrage identifies and exploits inconsistencies in market prices, regulatory arbitrage identifies and exploits inconsistencies in capital regulations. Regulatory arbitrage

undermines the effectiveness of capital regulations and as such is one of the primary motivators for regulators to repeatedly improve capital requirements.

Regulatory capital arbitrage exploits the differences between the real economic portfolio risk of the financial institution and a calculation of the risk according to the regulatory capital standards. When the regulation is not based on the market assessment of the risk and returns, management of the financial institution is motivate to perform the capital arbitrage since it follows the conflict targets in regulatory capital requirement and at the same time has to maximize risk-adjusted returns from the long-term point of view. In principal every rating agency should effort to estimate the probability of default of the bank the most exactly possible. Analogically we may think of the role of the regulator whose interest is to prevent financial system from unexpected bankruptcy of the financial institution.

Transaction of the transfer of the risk between banks and insurance companies is also a regulatory capital arbitrage. It is motivated by a different regulation of the two financial sectors. There arises a question whether the regulation of these sectors should not converge. If the same risks were covered by the same regulatory capital, there would be no room for the regulatory arbitrage and the motivation for the risk transfer. Another problem is that companies which are not subject to the supervision and which collapse could potentially influence stability of the financial sector in negative sense and indirectly also the interests of the customers of the institutional investors. (OECD, 2002)

The Uniform Net Capital Rule of the U.S. Securities and Exchange Commission is a risk-based capital requirement, but primarily capital was based on a bank's capital ratio. This made it particularly subject to regulatory arbitrage. U.S. commercial banks used letters of credit, loan commitments and swaps to move assets off their balance sheets already during the mid-1980s. Good motivation for the U.S. bank regulators to develop Basel I Accord was when some of these banks sold their headquarters buildings to realize a capital gain and then leased them back. Basel I imposed a risk-based capital requirement on banks, but its crude system of risk weights was itself easy to arbitrage.

Explosive growth in credit derivative and securitization markets during the 1990s can be largely ascribed to regulatory arbitrage of the 1988 Basel Accord, both in the U.S. and abroad. That regulatory arbitrage, in turn, motivated the development of Basel II. In the past

the ratio of capital to bank's assets served as an initial category for the assessment of the financial institution (capital adequacy). Regulation based on the risk management no more suffices with this simple principle and requires interpretation of the capital needed for the absorption of the extreme losses from the risk exposures to set the bank's solvency (economic capital). In this way there must be a tradeoff between strengthening capital regulations against regulatory arbitrage and keeping those regulations simple and affordable for the financial institutions that are subject to them. Basel II is far more complicated than the 1988 Basel Accord. This may have contributed to the decision by U.S. regulators to apply Basel II to only the largest U.S. banks. (Contingency Analysis, 2006)

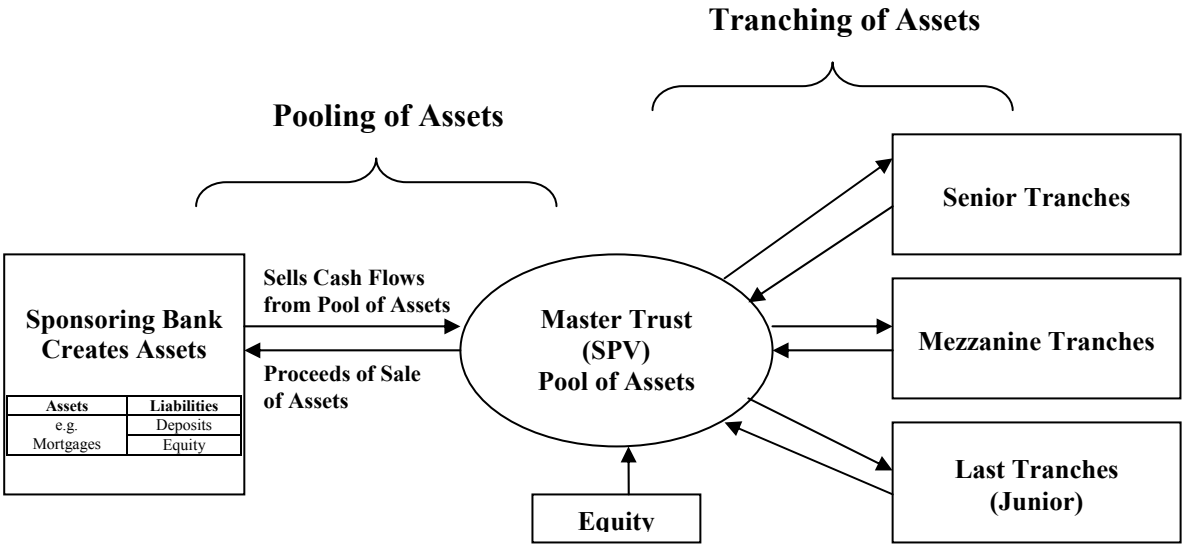
5.1.1 Major Types of Capital Arbitrage

There are four types of capital arbitrage recognized today. One of the oldest and the most popular forms of regulatory capital arbitrage is known as "cherry-picking". In the context of Basel I, cherry-picking is defined as the practice whereby banks shifted their portfolio's composition toward lower quality credits within a particular risk-weight category, e.g. the 100% risk bucket. An alternative form of cherry-picking in Basel II is shifting the portfolio's composition toward counterparties which receive a favorable risk-weight from the external credit assessment institution(s) that they use to risk-weight their exposures. Since the standardized approach to credit risk offers the possibility to banks to choose their ECAI, banks may want to tailor their lending policy to exploit the differences of opinion that frequently arise between external credit assessment institutions. The most obvious way for banks to engage in cherry-picking is to choose to work with a given ECAI and to only grant loans to counterparties for which the ECAI's assessments yield lower or equal risk-weights than the assessments of the other ECAIs. (Van Roy, 2005)

The second type of the capital arbitrage is so called securitization with partial recourse. Recourse is right of the buyer of receivables to obtain payments from the seller of receivables in case of debtor's default, case of prepayments or unenforceability of the receivables (Jílek, 2000). Mechanism of the securitization with partial recourse is following: bank securitizes part of the assets into asset-backed securities (ABS), e.g. mortgages into mortgage-backed securities (MBS), i.e. transfers them off the balance sheet and sells them to a specially created legal entity the "special purpose vehicle" (SPV). SPV finances this purchase by issuance of a number of different securities (tranches) differentiated by seniority

to private investors. In the event of substantial loss of value of the assets, then the SPV would be unwound and investors repaid in order of seniority. Also for the purpose of bankruptcy, accounting and regulation, SPV is regarded as a subject legally separated from the sponsoring bank and hence is not consolidated with it. In many cases bank can consider the securitized assets as a true sale for accounting and regulatory purposes although bank is left with most of the related risks via credit enhancement provided to securities secured by assets.

Schematic of a Securitization Transaction



Source: Gorton, G., Souleles, N. S.: Special Purpose Vehicles and Securitization; NBER WP 11190, Cambridge, March 2005

Investors are generally only willing to invest in ABSs with very high (AAA or AA) credit standing. In order that the tranches are acceptable to investors all such securitizations require credit enhancement. There are three main techniques of credit enhancement:

- An insurer may provide a direct credit enhancement (a promise to make payments in the event of poor performance of the underlying assets
- The sponsoring bank may provide credit enhancement by holding the riskier junior tranches
- Finally the assets may be guaranteed or supported by a special agency.

The credit enhancement improves credit ratings of ABS and can be structured such way that the contract principal and interest payments from the securitized credits exceed administrative costs of SPV and costs of ABS. Cash flows which SPV receives from this excess servicing are returned back to the sponsor bank. But when cash flows which SPV receives do not cover the costs, SPV does not pay anything to the bank. A positive excess servicing realizes to ABS in form of credit enhancement which works similarly to security position in SPV. The fair value of the excess servicing is recorded in bank's balance sheet and is treated as the recourse. Except returning the excess servicing bank often provides SPV direct credit enhancement for investors to ABS in form of standby letters of credit or acquisitions of subordinated interests in SPV. Amount of the enhancement, required by rating agencies, increases when higher credit rating is required and is structured in such manner that ABS have relatively high credit rating (usually AA/AAA). We can conclude that in reality there is a very small credit risk transferring from the bank to the investors. (BCBS, 1999)

In cases when securitized assets had been owned by bank before, credit enhancement is regarded as the recourse. Capital requirement of the recourse is usually equal to 8% of the recourse, thus there is 100% weight assigned to the recourse. In the United States the add-on is implemented to a moderate recourse and is set by following formula:

$$Add-on \quad = \quad \frac{R \times RWA}{TRC - R},$$

where R is amount of the moderate recourse, RWA total of the risk weighted assets except the moderate recourse and TRC is the total risk capital. Transfer of a very small or even no credit risk to the investors to ABS using this relationship when determining the risk weighted assets makes credit securitization increase capital adequacy. In fact this increase is reached by "concentration" of credit risk of the securitized credits to another financial instrument, e.g. to subordinated debt provided by bank and received by SPV, which maximum potential loss is substantially lower than for underlying credits of the securitization.

Since credit enhancement required by the rating agencies indirectly depends on the quality of underlying securitized credits, current approach to capital adequacy supports banks to securitized assets of the highest quality. Banks have the best incentive to securitize credits

with the highest quality which economic capital is substantially lower than the regulatory capital requirement. (Jílek, 2000)

Bank's investment into the SPV is not directly subject to the investors' investment. It means that the sponsor bank has right to a relative part of the principal and interest received by SPV from the underlying credits and absorbs only a relative part of all credit losses of the credit portfolio (e.g. credit write-offs). If the interest payments of the securitized credits allocated to the investors' investments (minus relative share of investors on the credit write-offs) exceed the amount corresponding with ABS, this surplus is regarded as an excess servicing and is returned back to the sponsor bank. Principal and interest payments of the securitized credits which are allocated into the bank's investment into SPV are available for performance of the liabilities of SPV toward investors into ABS. Share of investors on the principal repayments is usually reinvested into the new credits of SPV. According to this structure the sponsor bank usually provides a sufficient credit enhancement in order to ach an investment rating for ABS.

Third type of the capital arbitrage is so called remote origination. Case when a direct credit enhancement provided by a sponsor bank is regarded as a direct credit substitute, not the recourse, causes that banks then achieve even higher capital adequacy. Since the securitized assets have not been owned or sold by the bank, capital requirement lowers to 8% of the maximum potential loss of the credit enhancement. Remote origination means that securitized assets originate not from bank itself, but from the SPV. Although the bank is exposed to a similarly same risk as in case of the traditional securitization and never formally owns the underlying instruments, credit enhancement represents a direct credit substitute. Remote origination is usually part of commercial papers program hedged with the assets (asset-backed commercial papers). Direct credit enhancement provided by the bank has usually a form of a subordinated debt. Sponsor bank can by this method increase its capital adequacy above the level attainable with securitization of credits from its own balance sheet although a total bank risk is the same in both cases.

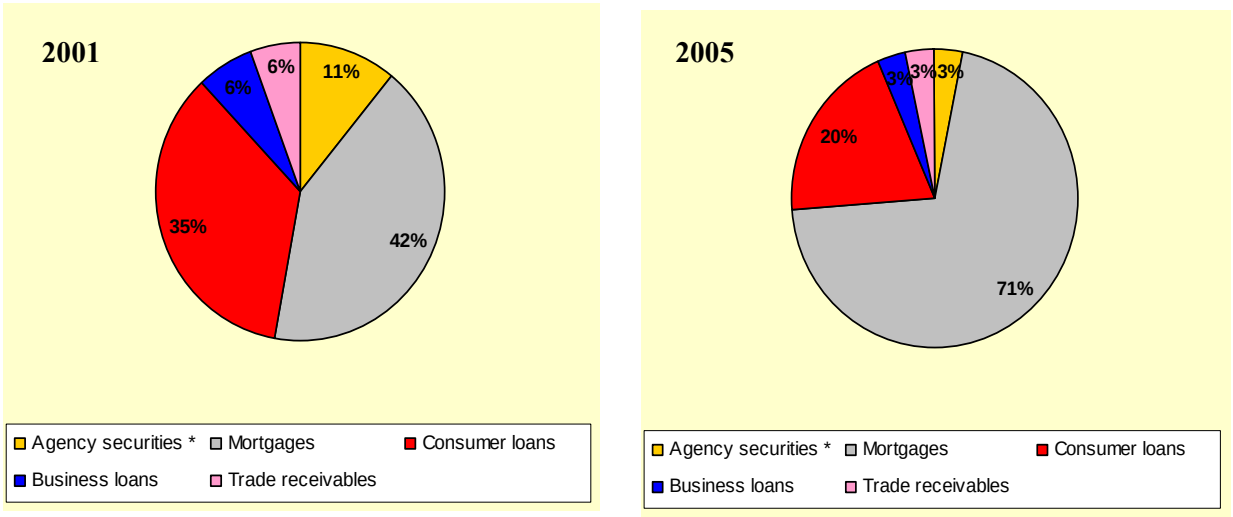
Finally last way of the regulatory capital arbitrage is an indirect credit enhancement which is not regarded as a financial instrument for a capital requirement calculation. Investors are usually willing to accept such indirect credit enhancement like an early amortization and

arrangements of the fast payments instead of the traditional guaranties. This decreases the capital requirement with respect to the securitized assets, in some cases down to zero. Collaterized loan obligations represent the innovations which allow banks to securitized cash flows from the trade credits without interruption of the client relationships. Credit derivatives represent a new group of the capital arbitrage, so called synthetic securitization, which has substantially lower structural costs than the traditional securitization. These products make capital arbitrage much more effective and attainable for a larger group of the banks.

5.1.2 Empirical Evidence

Capital arbitrage is not easy to measure since neither public financial statements nor regulatory reports contain sufficient information to do so. We can however use the estimated number of outstanding non-mortgage-related asset-backed securities (ABSs) and asset-backed commercial papers (ABCPs) issued through programs sponsored by the largest U.S. bank holding companies. Such securitization activities are highly motivated by capital arbitrage considerations and therefore their volume has been estimated by Federal Reserve System to provide a rough notion of what is the potential scale of the capital arbitrage. Nevertheless this cannot track e.g. cherry-picking through whole loan sales, cherry-picking induced by uncompetitive bids for high-quality assets, securitizations that are privately placed or not publicly rated, and arbitrage effectuated through credit derivative arrangements that do not result in ABS issuance (BCBS, 1999).

Graph 13 **Composition of the Sources of the Asset-backed Securities Outstanding in the U.S. in 2001 and 2005**

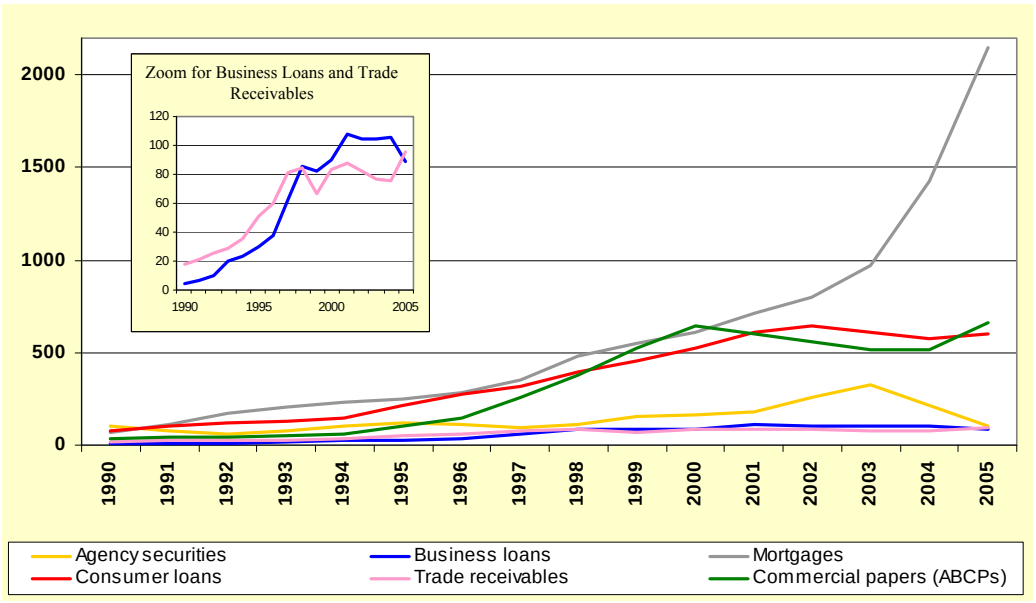


*Note: * Securities of federal mortgage pools backing privately issued collateralized mortgage obligations (CMOs); in CMOs, mortgage principal and interest payments are separated into different payment streams to create bonds that repay capital over differing periods of time*

Source: Board of Governors of the Federal Reserve System: Flow of Funds Accounts of the United States, Annual Flows and Outstandings; FED, June 2006

As we can see on the preceding Graph 13, percentage of mortgage-backed securities in the U.S. increased from 42% of all the asset-backed securities in 2001 to 71% in 2005. Therefore non-mortgage motivated ABSs played lower role relative to the mortgage ABSs. But as we can see on the following Graph 14, absolute numbers of the other ABSs in the longer period from 1990 to 2005 also increased (other development of the agency securities is not clear yet) and consumer-loans motivated ABCPs as well.

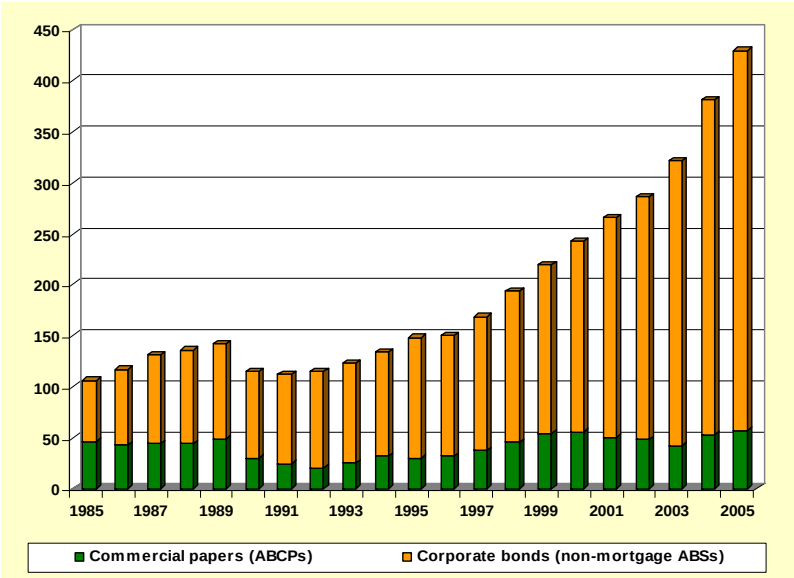
Graph 14 **Development of the ABSs and ABCPs in the U.S., 1990-2005, in $ billions**



Source: Board of Governors of the Federal Reserve System: Flow of Funds Accounts of the United States, Annual Flows and Outstandings; FED, June 2006

By March 1998, Federal Reserve staff together with the BCBS reported that the ten largest U.S. bank holding companies had $200 billion outstanding in non-mortgage, securitized bonds, i.e. a value equal to 25% of their risk-weighted loans (BCBS, 1999); Committee working paper pointed out that, "The securitization activities of these companies loom large in relation to their balance sheet exposures." Nor is the magnitude of securitization confined to U.S. banks. According to BCBS European regulators reported that over $40 billion in new securitized issues had been floated in 1997 by banks and non-banks, up five times in just two years. As of 2005 the credit market instruments, including commercial papers and corporate bonds outstanding, amounted to $429.5 billion (FED, 2006)

Graph 15 **Outstanding Non-mortgage ABSs and ABCP Issued by Bank Holding Companies, 1985-2005, $ billions**



Source: Board of Governors of the Federal Reserve System: Flow of Funds Accounts of the United States, Annual Flows and Outstandings; FED, June 2006

Comparable data are not available for non- U.S. banks, but market reports demonstrate that significant amounts of securitization-related capital arbitrage have been undertaken by banks in Canada, Europe and Japan, particularly through collateralized loan obligations (CLOs) and ABCPs. Securitization activities of these banks often appear to be funded in the U.S., reflecting the greater size and liquidity of U.S. markets. (BCBS, 1999) While the ABS market in Europe is not by far as liquid as the U.S. market, with the increase in ABSs issuance and the overall development of capital markets in the EU, we can expect the overcome of such weaknesses.

The Basel Committee has addressed the potential for regulatory arbitrage from shifting credit exposure between the banking and trading books. It has done so by imposing supplemental requirements for treatment of credit-related exposures in the trading book. Perhaps a better approach would be to correct the conceptual inconsistencies between the treatments of risk in these two areas. (Risk.net, 2006) Basel I was instrumental in the development of securitization and more generally of structured finance. Under Basel I, securitization had become a classic technique that allowed banks to decrease the amount of regulatory capital for some assets on their balance sheets, while not reducing the economic

capital, designed to capture the true economic risks associated with those assets, to the same extent.

As Basel II aims to better align regulatory capital with economic capital, one of the key drivers of securitization may according to Alain Debuysscher, Vice President, Senior Credit Officer in Moody's, disappear and one should legitimately question whether securitization and structured finance still make sense in the context of Basel II. Basel II is a complex accord that will undoubtedly reshape the structured finance market in the years to come. Globally speaking, regulatory capital arbitrage is unlikely to be a key driver of structured finance issuance, as may have been the case under Basel I. Other elements such as the diversification of funding sources and, increasingly, the cost of funding are more likely to become key structured finance drivers. Finally, Basel II should be somewhat good news for issuers, investors and other market participants. Structured finance and, above all, those structured finance techniques which allow issuers to achieve Aaa ratings appear to be here to stay. Basel II should create new opportunities for all players, provided they anticipate the changes and adapt to them. (Debuysscher, 2005)

5.2 Quantitative Impact Studies

Consultative proposals are published together with so called quantitative impact studies (QIS) examining an impact of Basel II on capital requirements and serving as a comparison with old capital requirements computations. The second quantitative impact study, QIS 2[18], gathered the data necessary to allow the Committee to gauge the impact of the second consultative document (CP 2) from January 2001 across a wide range of banks in the G 10 and beyond, given the differing risk profiles of banks and the extent to which credit risk mitigation is used. 138 banks from 25 countries participated in the study. QIS 2 results indicate that the CP 2 proposals for credit risk would on average deliver an increase in capital requirements for all groups under both the Standardized and IRB Foundation approaches.

[18] An earlier more limited study (QIS1) had been carried out in 2000 to inform the calibration of the second consultative document.

Quantitative impact studies use two types of analysis:

- Aggregation of changes in minimum required capital (MRC) on a portfolio level across banks for a certain portfolio. "Portfolio" in this document refers to the different exposure classes laid out in the revised Framework

- Aggregation of changes in MRC in the whole banking system of individual countries. This includes in particular an assessment how changes in the individual portfolios contribute to the total change in the banking system.

QIS' also use two types of banks according to their size: Group 1 banks are diversified, internationally active banks with Tier 1 capital of at least Euro 3 bn. while Group 2 banks represent smaller or more specialized banks which are more likely to use the Standardized approach. Consistent aggregation requires a weighting scheme which reflects the differences in the relative contributions of individual banks to the changes of MRC in the whole banking system. In choosing a weighting scheme, it is necessary to distinguish between Group 1 and Group 2 banks. The reason is that the majority of Group 1 banks participate in the QIS exercise and, therefore, the data collected for these banks is broadly representative for Group 1 banks of an entire country. This is not the case for Group 2 banks. Since relatively few of the smaller Group 2 banks are participating in QIS 5, they would be underrepresented in the analysis if the same weighting scheme is applied as for Group 1 banks. Therefore, a different weighting schema should be used for Group 2-banks.

Table 10 **Percentage Change in Capital Requirements under CP2 Proposals**

	Standardized Approach		IRB Foundation Approach		IRB Advanced Approach	
	Credit	Overall	Credit	Overall	Credit	Overall
G 10 Group 1	6 %	18 %	14 %	24 %	-5 %	5 %
Group 2	1 %	13 %				
EU Group 1	6 %	18 %	10 %	20 %	-1 %	9 %
Group 2	-1 %	11 %				
Other groups	5 %	17 %				

Source: Bank for International Settlements: Results of the Second Quantitative Impact Study; Basel Committee Publication, November 2001

5.2.1 Quantitative Impact Study 3

The material distributed for QIS 3 consisted of an electronic questionnaire with the corresponding instructions and technical guidance that set out the proposed minimum capital requirements in detail. More than 350 banks in 43 countries participated in the exercise. The results varied considerably depending on banks' portfolio composition. (BCBS, 2003)

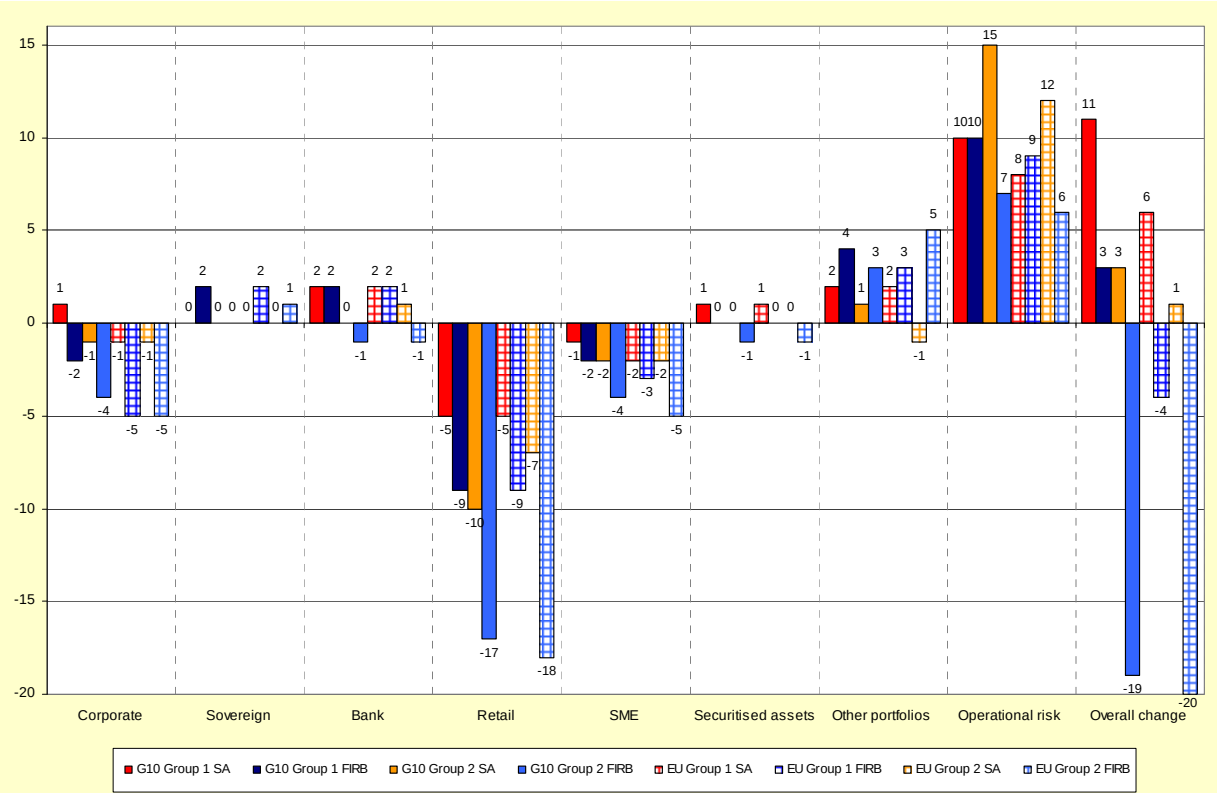
Table 11 **World-wide Results of QIS 3 - Overall Percentage Change in Capital Requirements**

	Standardized Approach			IRB Foundation Approach			IRB Advanced Approach		
	Average	Max	Min	Average	Max	Min	Average	Max	Min
G10 Group 1	11 %	84 %	-15 %	3 %	55 %	-32 %	-2 %	46 %	-36 %
Group 2	3 %	81 %	-23 %	-19 %	41 %	-58 %			
EU Group 1	6 %	31 %	-7 %	-4 %	55 %	-32 %	-6 %	26 %	-31 %
Group 2	1 %	81 %	-67 %	-20 %	41 %	-58 %			
Other groups	12 %	103 %	-17 %	4 %	75 %	-33 %			
Czech Republic	30 %	41 %	7 %	24 %	25 %	22 %			

Source: Bank for International Settlements: Quantitative Impact Study 3. Overview of Global Results; Basel Committee on Banking Supervision 5 May 2003

For the Standardized approach QIS 3 reports some increases in capital requirements in all the country groups. In the Foundation IRB approach, Group 1 banks on average showed only small changes to current requirements, but the results show substantial reductions for G 10 and EU Group 2 banks, which are more retail orientated on average. In the Advanced IRB approach, all the groups of banks report reductions in capital requirements compared with those under the previous Accord.

Graph 16 **Overall QIS 3 Results Most Likely Standardized and IRB Approach Relative to Current Accord, G10 and EU Average by Portfolio in Percent**



Source: Bank for International Settlements: Quantitative Impact Study 3 - Overview of Global Results; Basel Committee on Banking Supervision, May 2003

On the previous Graph 16 we can see average contributions to the change in capital requirement according to different portfolios exposures which are derived from the weights of these portfolios. The weight is measured by ratio of given portfolio to the current capital requirement. In order to compare results, for Czech banks we can consider particularly Group 2 of the EU countries, where the Czech Republic was directing, or if you like Group of other countries. The results show the retail portfolios as the most contributing to the reduction in minimum required capital under the IRB Foundation approach for G10 Group 2 (-17%) and EU Group 2 banks (-18%), the reduction is as well evident for the other groups of banks. For G10 and EU banks under the IRB approaches, the other main contributing portfolios are corporate and SME retail. The highest increase for operational risk is due to the new capital requirements for this kind of risk.

Results of the particular countries can be in some ways influenced by discretions of national regulators; there are 45 spheres of national discretions in which regulator may choose one out of two possibilities which he/she regards as adequate to the given conditions, but the trend is not to deviate much from the current applied rules. QIS 3 results are presented on a consolidated basis and therefore the banks which were involved to the portfolio of their mother banks according to this principle were no more separately included. The same happened in the Czech Republic where results for the two large banks involved in QIS 3 – KB and Czech Savings Bank – were part of their mother banks portfolios and were reflected in the worldwide results average for EU countries. Within the scope of consolidated group the higher impacts of Basel II on capital requirements of the daughter banks are hence eliminated on the solo basis. Information systems of the banks were not always able to furnish all information needed for the computation of Basel II impacts; e.g. concerns of the information on collateral and distinctions of exposures toward small and medium enterprises (SME). On this account BCBS believes that capital requirements for these exposures (except for the exposure to the small customers) are overvalued.

According to BCBS the most characteristic features of the QIS 3 results are:

- High variability among banks as well as among particular portfolios, i.e. among exposures categories (see the wide range between maximum and minimum figures in Table 11); Mostly banks with higher exposures to small customers reached significantly lower capital requirements according to the new methods. In the IRB methods also the quality of the exposures plays high role: banks with less risky exposures, or with the adequate security, attain lower requirements.

- Significant increase of the overall capital requirement brings a new capital requirement to the operational risk which is also an important source of the results variability.

- IRB methods as well as the Advanced IRB methods for the credit risk embody a potential to lower the capital requirements.

The results of QIS 3 are generally in line with the BCBS's objectives: minimum capital requirements would be broadly unchanged for large internationally active banks, which are likely to use the IRB approaches. The proposals would offer an incentive for

internationally active banks to adopt the more sophisticated IRB approaches. For smaller, more domestically orientated, G10 and EU banks capital requirements could be substantially lower than currently under the IRB approaches, largely reflecting the importance of retail for these banks. In other countries there will be significant variation depending on the conditions in different markets and the focus of activity of the banks. This was proved for the Czech Republic: comparison of the worldwide and Czech results showed that increase of the capital requirement in the Czech Republic is substantially higher than the average of all the groups and banks. In addition large impact of the new requirements to operational risk is higher in the Czech Republic than in the other countries. This is due to high margins and fees.

Findings from the results of QIS 3 and the experience from the process of the study bear evidence that impacts on banks in less developed countries, where Czech Republic belongs, will be harder. Some banks can be very seriously hurt – they will have to maintain additional capital to cover capital requirements. Infilling and data processing was a new experience with more advanced methods for many banks and regulators - it was proved that banks and regulators had to devote their larger attention and sources to understand these methods and implementation of Basel II. There is a need to prepare adequate number of qualified workers as well as technical resources such like data collection or IT/IS, especially regarding the advanced procedures. Interests of many banks lead to the use of advanced procedures, mainly within consolidated groups. Regulators hence have to be well prepared for the over-border cooperation. However banks should neither underestimate preparation for the standardized method which remains to be the actively used methods for banks which would not pay off to implement the advanced methods; but also banks which take account of IRB method in future, but will not be able to meet all the requirements in the initial phase, should be prepared for the standardized method.

QIS 4 incorporated changes in the rules from the third consultative document issued in April 2003 to the revised Framework issued in June 2004 and was a step to avoid the problems that emerged during the QIS 3 data collection exercise and the subsequent analysis.

5.2.2 Quantitative Impact Study 5

Between October and December 2005, the Basel Committee undertook a global fifth Quantitative Impact Study (QIS 5) in 31 countries; the report on its results has been published on June 16, 2006. Except the U.S. all G10 countries and 19 non-G10 countries participated in the exercise. The Basel Committee received data from 56 Group 1 banks located in the G10 countries, 146 G10 Group 2 banks and 155 banks from other countries. Limited data from the U.S. QIS 4 exercise were also included where possible (additional 26 institutions). In contrast to previous exercises, the QIS 5 reflects all recent changes to the Basel II Framework, in particular the move to a framework calibrated on unexpected losses only for computing risk-weighted assets, the change in the treatment of reserves, the 1.06 scaling factor applied to credit risk-weighted assets, the recognition of double default, and the revised trading book rules. According to national supervisors the data survey quality has significantly improved since the previous study; however the estimates of the economic downturn loss given default and issues related to trading book need to be improved further.

The important quantities for the change in minimum required capital ($\%\Delta MRC_i$) are the credit risk-weighted assets of bank i both for the standardized approach ($cRWA_i$) and the current Accord ($cRWA_i^{Curr}$), i.e. risk-weighted assets without market risk and operational risk according to the Basel II Framework. Another entry is the amount of general provisions which are eligible for inclusion in Tier 2 capital under the standardized approach and the current Accord (GP_i^{incl}, $GP_i^{incl,Curr}$). General provisions are allocated to each of the specific portfolios (index PF) according to the share of risk-weighted assets relative to the overall credit risk-weighted assets for the entire bank. The percentage change in minimum required capital on portfolio level can be calculated as:

$$\%\Delta MRC_i^{PF} = \frac{8\% \cdot RWA_i^{PF} - \frac{RWA_i^{PF}}{cRWA_i} \cdot GP_i^{incl}}{8\% \cdot RWA_i^{PF,Curr} - \frac{RWA_i^{PF,Curr}}{cRWA_i^{Curr}} \cdot GP_i^{incl,Curr}} - 1$$

Following formula shows computation of the percentage change in minimum required capital for bank *i* for the Basel II Framework relative to the current Accord under both FIRB and AIRB approach. In the UL-based framework, a shortfall or excess in provisioning (recognition of general provisions in Tier 2 capital is different under the standardized and IRB approaches) affects the numerator of the capital ratio, i.e. the capital figure, and hence the formula is modified in order to keep Basel II data comparable with the current Accord data. D_i stands for the regulatory calculation difference, i.e. total expected loss amount minus total eligible provisions. Variable *Ded* stands for total deductions, including deductions for securitization, related entities, and other supervisory deductions. $GP_i^{incl,PU}$ are general provisions which are eligible for Tier 2 under the standardized approach partial use.

$$\%\Delta MRC_i = \frac{8\% \cdot RWA_i + \max\{D_i, -0.6\% \cdot cRWA_i\} + Ded_i - GP_i^{incl,PU}}{8\% \cdot RWA_i^{Curr} + Ded_i^{Curr} - GP_i^{incl,Curr}} - 1$$

Table 12 **Change in Minimum Required Capital Relative to Current Accord, in %**

	Standardized Approach	IRB Foundation Appr.	IRB Advanced Appr.	Most Likely Appr.
G10 Group 1	1.7	-1.3	-7.1	-6.8
G10 Group 2	-1.3	-12.3	-26.7	-11.3
CEBS Group 1	-0.9	-3.2	-8.3	-7.7
CEBS Group 2	-3	-16.6	-26.6	-15.4
Other non-G10 Group 1	1.8	-16.2	-29	-20.7
Other non-G10 Group 2	38.2	11.4	-1	19.5

Note: Group 1 - diversified, internationally active banks with Tier 1 capital of at least Euro 3 bn.
Group 2 - smaller or more specialized banks (more likely to use the Standardized approach)

Source: Bank for International Settlements: Results of the Fifth Quantitative Impact Study (QIS5); Basel Committee on Banking Supervision, June 2006

The QIS 5 results for the G10 countries[19] show that relative to the current Accord minimum required capital under Basel II would decrease. For Group 1 banks, minimum required capital under the most likely approach (the expected approach after implementation) to credit and operational risk would on average decrease by 6.8%. The advanced IRB approach shows more reduction in minimum required capital (by 7.1%) than the foundation approach (by 1.3%). Conversely under the standardized approach minimum required capital would increase by 1.7% for Group 1 banks. However, only very few banks from G10 Group 1

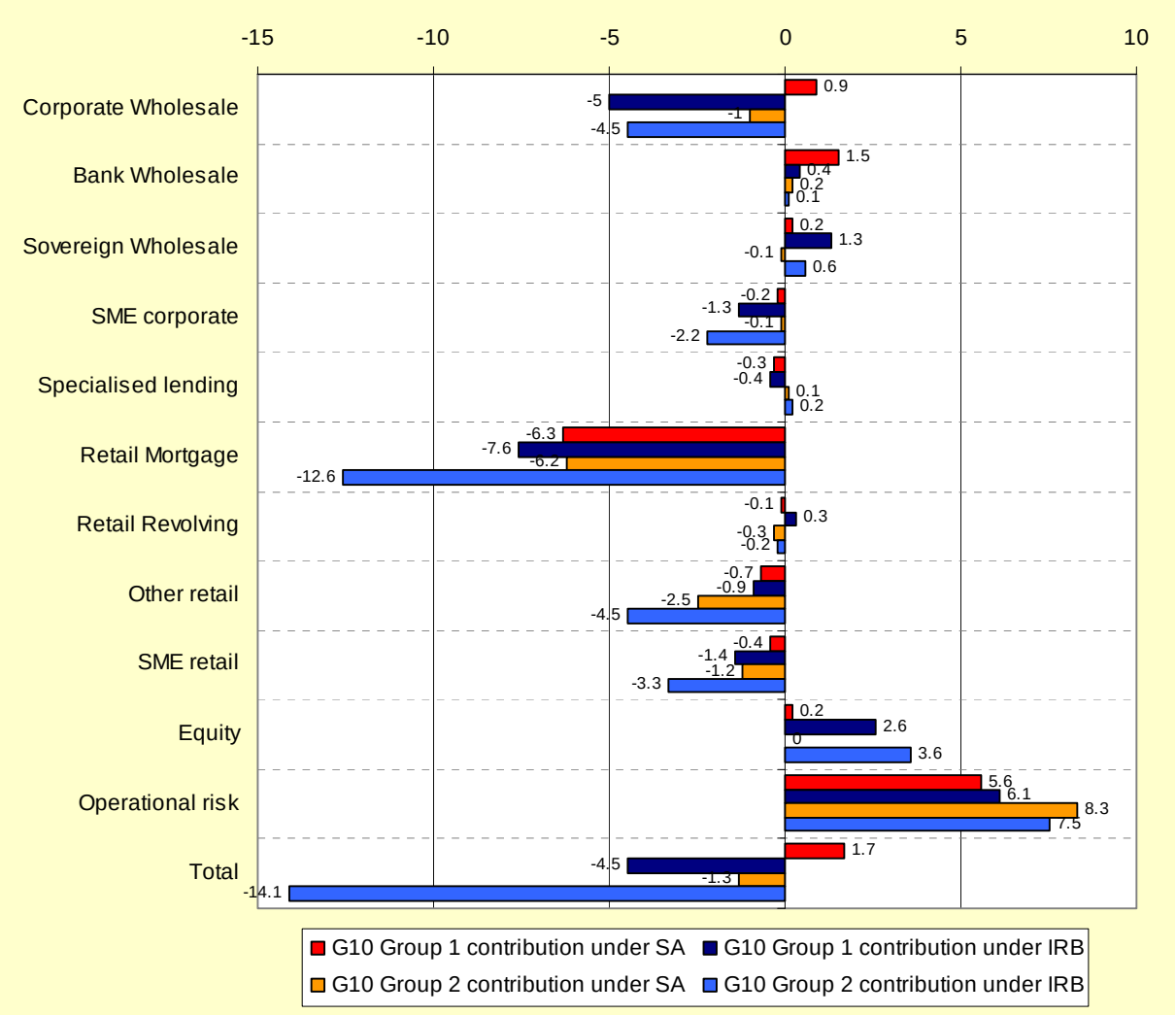
[19] G10 today includes the 13 Basel Committee member countries (Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom, and the United States)

will likely adopt this approach. Group 2 banks show a larger reduction in minimum required capital under the IRB approaches, and under the standardized approach minimum there would be a decrease by 1.3%, in particular due to the higher proportion of retail exposures for those banks.

The countries of the Committee of European Banking Supervisors (CEBS)[20] report results which are in general broadly in line with the figures which were obtained on the G10 level. Results for banks in the rather small sample of other non-G10 countries show substantial dispersion both within and between countries, mostly due to the specialized business profile of certain banks and particularities of national implementation. The wide range of bank- and country-specific circumstances suggests that supervisory discretion is particularly important in these countries, and the results might therefore not be representative for all non-G10 countries. Although data quality is an issue for some banks in other non-G10 countries, the results appear to be broadly in line with results for G10 banks to the extent that the risk profiles are similar. (BCBS, June 2006)

[20] This group comprises 30 countries (both G10 and non-G10), 20 of which provided data for QIS 5

Graph 17 **Overall Results Most Likely Standardized and IRB Approach Relative to Current Accord, G10 Average by Portfolio in Percent**



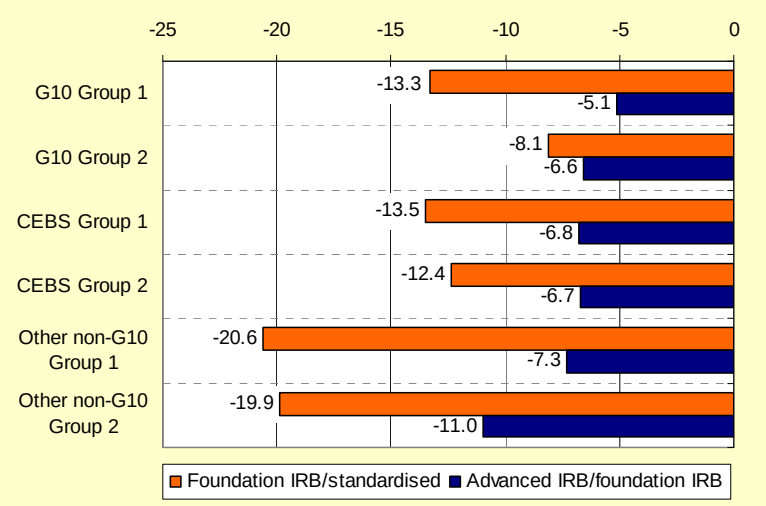
Source: Bank for International Settlements: Results of the Fifth Quantitative Impact Study (QIS5); Basel Committee on Banking Supervision, June 2006

According to QIS 5 results the retail mortgage portfolio contributes the most to the reduction in minimum required capital under the standardized (-6.3%) and the IRB approaches (-7.6%) for G10 Group 1 banks and also for G10 Group 2 banks (-6.2% and -12.6%). For Group 1 banks under the IRB approaches, the other main contributing portfolios are corporate and SME retail (decreases) as well as equity (increase). The highest increase for operational risk is due to the new capital requirements for this kind of risk (5.6% and 6.1% for G10 Group 1 banks; 8.3% and 7.5% for G10 Group 2 banks). Dispersion of the results has decreased for some portfolios compared to QIS 3, but it is still large. In the other non-G10

countries, capital ratios are on average higher than among the G10 which suggests that judgment by bank management, market pressures or supervisory discretions regarding Pillar 2 may be acting to maintain higher levels of capital than are explicitly required under the current Accord. These features will probably continue to influence these countries under the Basel II Framework.

Thanks to banks providing data on at least two different approaches the QIS 5 study may analyze the incentives for banks to move to the more advanced approaches. According to this analysis capital requirements provide an incentive for banks on average to move to the more advanced approaches: minimum required capital for G10 Group 1 banks was 13.3% lower under the foundation IRB approach than under the standardized approach, and 5.1% lower under the advanced IRB approach than under the foundation IRB approach (not taking account of the transitional floors), see the following Graph 18.

Graph 18 **Incentive Structure: Minimum Required Capital for Foundation IRB Relative to Standardized, and Minimum Required Capital for Advanced IRB Relative to Foundation IRB, in Percent**



Source: Bank for International Settlements: Results of the Fifth Quantitative Impact Study (QIS5); Basel Committee on Banking Supervision, June 2006

Macroeconomic and credit conditions prevailing in most G10 countries at the time of QIS 4 and 5 were more favorable than during QIS 3 which according to the BCBS influenced the results. This impact however cannot be accurately quantified with the current available information. Also having in mind the remaining uncertainties in the data, the Committee agreed that adjustment of the scaling factor of 1.06 to credit risk-weighted assets under IRB approaches would not be warranted at this stage. "The Committee expects that in the course of implementing the Basel II Framework, supervisors will ensure that banks will maintain a solid capital base throughout the economic cycle. The Committee believes that mechanisms are in place to achieve this goal. National authorities will continue to monitor capital requirements during the implementation period of the Basel II Framework. Moreover, the Committee will monitor national experiences with the Basel II Framework." (BSBC, June 2006)

5.3 Impact of Capital Adequacy on a Long-term Performance of the Banks

Basel II was established with the target to build a stable financial system. It is however possible to object that the capital tied to the riskiness of the assets will fluctuate during the times of economic boom and recession. The creditworthiness of the clients will be high during the good times, thus leading to less capital requirements and will be low during the worse periods, demanding more capital and thereby squeezing the economy. The breach of the main objective of the Basel II could be fixed e.g. by setting capital charges not on current risk ratings, but on an average over the past few years.

Given the costs of Basel II compliance, banks will be seeking to maximize the return on their commitments. “It seems that the scope for 'lending arbitrage' is in-built in the IRB approach.“ (Dash, 2006) Probably the symbiosis between preferred corporate borrowers and those sophisticated banks using the IRB approach will produce the best outcome. Indeed, non-G10 corporates and those in developing countries face a distinct disadvantage under the IRB approach to credit risk, they will not be able to lend to high-rated corporations, because risk weights rise exponentially along the scale of higher probability of default. Dash also reasons that possibly, a caste system in the banking industry would develop with two types of banks: the Basel II-compliant banks with top-rated corporations as clients and the Basel II-non-compliant banks with middle- and low-rated corporations as clients.

There is another shortcoming of the Basel II impacting the overall development: Many of the corporations in central and eastern European countries (CEECs) do not have a debt rating. Even if they have one, the efficiency of the same can be far from the international standard. For materializing the benefits of the accord, more companies will need to be rated and probably more rating agencies will need to be born. In this scenario, it becomes the prerogative of the national supervisors to verify the robustness of the rating agencies. Meanwhile, the rating agencies will come under more and more pressure to deliver good ratings to win business. Expressing concerns on the over-reliance on credit rating agencies, their quality and the extent of coverage, some of the countries have suggested different ways of setting risk weights under the standardized approach for credit risk management. (Dash, 2006)

Compliance to Basel II would be a good business strategy for all the banks even if they were not required to do so. Achieving Basel II has obvious advantages: it's an opportunity for banks to swimmingly connect all IT systems and streamline business processes. It forces the bank to adopt best practices and align business with the changing market. The other unmistakable benefits include better market valuation, lower cost of liabilities, reduction in provisioning requirements, etc. These benefits clearly create a competitive advantage. The investments in technology will probably pay itself many times over the reduced divergence between regulatory and economic capital frees up the excess funds tied to maintain capital adequacy. This also improves leverage. Moreover risk based approach to credit reduces the need for bad debt provisions; the cost of liabilities fall as compliant banks can raise funds at lower costs. A well settled reporting system captures the possibility of default early to prevent asset loss. (Drost, 2005)

6 Future Perspectives of Financial System Regulation in the World and in the Czech Republic

6.1 Current Development of the Banking Sector and New Challenges

In CEECs economic growth remained in 2005 much more optimistic than in the euro area countries. Banking sector profitability also increased significantly in 2005, with average ROE of close to 20% (except of Slovenia where the ROE was 14%) (ECB, 2006). Supported by strong growth in lending, mostly to households, interest income increased. However, the share of interest income as a percentage of the total generally declined, except in Poland, due to a significant rise in net non-interest income such as fees and commissions as well as trading income on foreign exchange and derivatives operations. Most CEECs recorded an increase in operational costs, especially labor costs; nonetheless, cost-to-income ratios remained stable or even improved due to the significant increase in income.

Provisioning for loan losses continued to decline in most CEECs, and banks in Poland, Hungary and Slovenia further lowered their provisioning rates in 2005. Only in the Czech Republic there was an increase in provisions and write-offs, possibly reversing the low provisioning pattern that characterized the banking environment in 2004. Average capital adequacy ratios declined in all five CEECs since the risk-weighted assets significantly increased. This was mainly attributed to high lending growth, which increases credit risk requirements. Nevertheless, these banking sectors still remain well capitalized, with the gap between Tier 1 and the regulatory solvency ratio standing well above regulatory minimum levels. (ECB, 2006)

Infosys (2006) discusses top imperatives which banks should consider to maintain their competitive advantage. Significant run up in emerging markets, headed by China, in the past year, makes global banks to take up minority stakes in large banks in these new growth markets. In December 2005, Chinese regulators announced that they were opening seven more cities to foreign banks totaling to the number 25. By contrast, there was little excitement for international players tracking banking developments in India. Infosys suggests that the reason is the measured attitude of the regulators with regard to foreign investment in the

Indian banking sector. Timetable for opening up Indian banking to international competition under its WTO obligations is until 2010 only. Another trend that started in 2005 has been cross-border mergers and acquisitions in Europe. This has been strictly pursued by regulatory intervention for years, but now, under EU norms for cross border acquisitions, this looks increasingly possible.

Banks also need to renew their focus on the product portfolio management (second challenge) since they are facing increased compliance requirements and pressure to grow revenues through entry into new markets. In introducing products and services to newer markets, banks face the need to modify them to serve local market requirements, while being faced with the challenge of maintaining the integrity of the product globally. Another challenge according to Infosys is an information security preventing banks from phishing or online identity theft. In 2002 it had been estimated that about 250,000 instances of identity theft had occurred in the U.S.; today it is estimated at 9 million (Infosys, 2006). Customers have realized that identity theft is no longer an institution's problem alone. From a bank's point of view, improved customer information security is a source of competitive advantage as much as it is a method of cost reduction. Customers will continuously have to be informed about new techniques of identity theft, regulators will be continuously lobbied for stronger laws and action against identity thieves and banks should also cooperate in this matter.

The key issues in implementing enterprise risk management have been the lack of good quality data and modeling sophistication. Regulations like Basel II which have imposed multiple regulatory requirements on risk management, financial disclosures, accounting standards and corporate governance have had the beneficial side effect of improving data quality. Banks should adopt a portfolio approach towards managing individual risk classes. Credit risk portfolio models will provide them with the benefit of portfolio diversification that is not provided by the Basel II guidelines yet. One task of the risk management will be to try to integrate various risks in arriving at a single risk number. Banks may need to provide investors and analysts risk information that facilitates comparison among peer groups. The single number will also help the board set risk objectives that are transparent across the organization and can be easily monitored. In a competitive business landscape, banks are under pressure to innovate, improvise and differentiate their products and reduce the time-to-market. The rise of new businesses and newer ways of doing existing business has

significantly influenced the need to better assess the business value realized from IT investments through better use and re-use of existing IT assets. (Infosys, 2006)

6.2 Basel II Shortcomings

Dash (2006) from Cognizant Technology Solutions, a provider of IT services, discusses deficiencies of Basel II. Regarding existing building blocks in Basel II Dash finds several shortcomings, especially regarding risk components: there is a strong positive correlation between probability of default (PD), loss-given default (LGD) and exposure at default (EAD) which are used for calculation of expected loss, although Basel II has assumed independency of these variables (BIS, 2002). These correlations decide the volatility of losses or the unexpected loss component of credit risk. But Basel II does not explicitly mention the correlations between the risk components. With improved computing technology, Basel Committee might well feel the need to identify some more drivers of credit risk apart from PD, LGD, EAD and maturity and try to crystallize them further to improve accuracy and materiality in the absolute risk measurements.

Another shortcoming would be that while arriving at the formulae for calculation of capital charge, credit losses are assumed to have a normal distribution. But as Dash (2006) notes there is a widespread consensus that historical credit losses display a much greater frequency of extreme outcomes than would be predicted by a normal distribution. Future work for the Basel Committee is to accommodate some alternative methods of calculating capital requirements taking different distributions into account. The feature which Dash considers as one of the most important regarding capital computation is that the total capital required for all exposures is the sum of the capital for the individual exposures. This approach ignores diversification, one common principle of risk management. In reality, the risk of a portfolio of positions is usually less than the sum of the risks of the individual positions. “The degree of diversification is determined both by the extent to which different market variables tend to move together and by the extent to which different businesses have similar positions. The greater this correlation among defaults, the higher the Basel capital requirement. There appears to be a consensus that Basel II is relatively conservative in its correlation assumption.” (Dash, 2006) Questionable is also how to segregate mutually dependent interest rate risk and credit risk in the case of the fixed income assets.

Basel II discusses a broad range of risk-reducing features of some transactions: collaterals, arrangements to net multiple exposures with a single counterparty, and third-party credit enhancements like credit derivatives. However among the credit derivatives, only credit derivative swaps and total return swaps are accepted. Special purpose vehicles are generally not recognized as eligible protection providers in terms of synthetic securitization, even in cases of their full collateralization. Treatment of the operational risks have been included under Pillar II, but for example, banks' use of collaterals, guarantees or credit derivatives to offset credit or counterparty risk brings its own set of challenges, including legal risk, documentation risk and liquidity risk. Pillar II says supervisors should require banks to have written credit risk mitigation policies and procedures to control those types of residual risks. Future Basel Committee work is expected to try to explain these risks more specifically, both in terms of their occurrence and their impact on capital. Other operational risks left out of the definition, including reputation and strategic risks, will be most probably included in any future Basel project. To conclude there are still many things to be improved and the future Basel project may do it.

7 Conclusion

As the thesis has shown, regulatory risk matters as the financial markets are currently undergoing some of the most rapid and extensive changes in any markets such as integration, globalization, increased securitization, or broadening of derivatives markets. These trends amplify the potential impact on general public in case of failure of large financial institutions. This must be hampered by an appropriate regulation. Basel Committee on Banking Supervision regulates capital cushion of the banks in order to maintain the stability of banking sector; instability could cause serious shock for whole economy. That is why banking sector is one of the most regulated branches. The most used measure of the bank's stability is capital adequacy. This indicator is becoming more and more important as the financial markets open out and develop the banking products, especially in the area of financial derivatives.

After the almost 20 year development of the capital adequacy regulation, New Capital Accord (Basel II) determines a new framework for the capital requirements which will come into effect since the beginning of 2007. Basel II requires financial institutions to put together new systems of governance and control to address three types of risk: credit risk (setting out the minimum capital a bank needs), operational risk (failure of internal systems and processes), and market risk (e.g. exchange rate fluctuations). As with other regulatory requirements, Basel II is not an optional extra, it is a requirement which institutions need to address, and it will not come cheap. The Accord demands new standards of risk management and capital efficiency and needs to be understood and acted upon at all levels from the board down.

The costs of Basel II implementation are analyzed in this thesis with the help of the BCBS' quantitative impact studies and PriceWaterhouseCoopers' report from 2004. Results of these analyses show that capital requirements for banks will reduce. Moreover, there is likely to be a redistribution of regulatory capital requirements among banks and between banking systems across countries. It is difficult, if not impossible, to determine costs and effects (including loan pricing) that can be unambiguously attributed to Basel. Compliance with the Basel Accord has, however, distorted some investment priorities and the qualitative

requirements of regulators will increase implementation costs. The implementation effort will also crowd out other developments that might otherwise have occurred. Despite of the difficulties with Basel costs measurement, PriceWaterhouseCoopers (2004) study estimated that Basel II implementation costs after taxation up to 2006 will average as much as € 20-30 bn.

As the thesis further concluded, in spite of the fact that the original Basel criteria have had some shortcomings, they resulted in generally better situation on the field of bank risk measurement. Basel II will even more intensify this trend. Banks will continue in emphasizing the significance of the risk management – there will be particularly a narrower interconnection with the other processes in bank, e.g. product supply, assessing in accounting, etc. More room for monitoring of meeting capital adequacy should have also public (market), because banks will have to publish the data from measurement of the capital adequacy in a wider extent than up to now. Basel II will be above all much more complex with a larger impact on the competitiveness of the banks than under the current regulation which makes some banks to be up to the ears in liquid resources.

The thesis stresses that the positive effects (benefits) of the new regulation of the financial markets will outweigh the negative effects (costs) in the long run, namely by the improvement of banks' risk management and increased competitiveness of the banks which will be forced to operate more effectively which in turn will benefit financial sector as a whole. Regulatory risk is hence first of all a challenge for the financial institutions to gain and maintain their competitive advantage. Relationship between the capital banks are asked to hold and their profitability has been proved to be positive.

Despite of the numerous problems of the banking sector in the Czech Republic, new approach to regulation and supervision, together with Czech government, helped to improve its performance. Today, Czech banks, to a large extend owned by foreign investors, are part of the international groups and are able to compete on the global financial markets. Capital adequacy in the Czech Republic was increasing until 2001, but afterwards started to increase. Today the indicator holds close to 12% which is in line with the development on the European financial markets.

A lot of effort has gone into realizing Basel II, though the issues raised are not radical in nature, they challenge some of the assumptions of the accord and can be resolved. New Basel accord should address the issue of diversification benefits acknowledging the correlations between credit risk and market risk, as well as wider description of operational risk and business risk treatment. Regulation may not force compliance but the market will. In an interconnected market that allows free flow of funds Basel-compliant banks stand a better chance of winning. Non-compliant banks will steadily lose their competitive edge as customers move funds to safer compliant banks, cost of meeting an asset-liability mismatch increases and the banks' margins fall.

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