

BASEL II: A Risk approach for the Banking System



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Outline



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Introduction



- What is a financial (or an economic) crisis?
- Which financial crisis do we remember?
- What are the linkages between the financial markets?

Introduction



- Basel is a city in Switzerland that has a population around 150.000. Being located where the Swiss, French and German borders meet, Basel also has suburbs in France and Germany.
- But what is the importance for us and why are we talking about that city?



Introduction



- It is important for us because Bank for International Settlements (BIS) is located in Basel and BIS is the world's oldest international financial organization (established on 17 May 1930).
- Basel Committee on Banking Supervision (BCBS) is housed at the BIS.
- Why the world need to establish an institution like BCBS?

Introduction



- BCBS*: The Basel Committee on Banking Supervision provides a forum for regular cooperation on banking supervisory matters. Its objective is to enhance understanding of key supervisory issues and improve the quality of banking supervision worldwide. It seeks to do so by exchanging information on national supervisory issues, approaches and techniques, with a view to promoting common understanding.

(*<http://www.bis.org/bcbs/>)

Introduction



- Who are the members of the Basel Committee?
Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Indonesia, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. (27 high volume countries)

Introduction



- Do we really need a regulatory body for the banking system?

Main purpose is to make sure that a bank keeps enough capital for the risks it takes.

- Banks do not like to reserve their cash.

WHY?

Historical Outlook



- **History of Bank Regulation:**
 - Pre-1988
 - 1988: BIS Accord (Basel I)
 - 1996: Amendment to BIS Accord
 - 1999: Basel II first proposed

Historical Outlook – Pre-1988



- Banks were regulated using balance sheet measures such as the ratio of capital to assets
- Definitions and required ratios varied from country to country
- Enforcement of regulations varied from country to country
- Average bank leverage increased in 1980s
- Off-balance sheet derivatives trading increased
- Least developed country's debt was a major problem.

BASEL I - 1988



- It introduced two requirements:
 - ✦ i) The ratio of a bank's asset to its capital had to be less than 20 (capital multiple requirement).
 - ✦ ii) Banks are required to keep capital equal to at least 8% of the risk-weighted assets (a.k.a. Cooke ratio). Cooke ratio calculates the amount of capital a bank should have as a percentage of its total risk-adjusted assets. The calculation is used to determine a minimum capital adequacy standard that must be maintained by banks in case of unexpected losses. At least 50% of capital (4% of the risk-weighted assets) must be in Tier 1.

BASEL I



- Tier I capital is the core capital, this includes equity capital, common stock and disclosed reserves (or retained earnings).
- Tier II capital is the secondary bank capital that includes items such as undisclosed reserves, perpetual preferred stocks, general loss reserves, subordinated term debt, and more.

BASEL I



A risk weight is applied to each on-balance-sheet asset according to its risk level.

Risk Weights for on-balance-sheet items:

Risk Weight (%)	Asset Category
0	Cash and claims on OECD governments such as Treasury bonds or insured residential mortgages
20	Claims on OECD banks and OECD public sector entities
50	Uninsured residential mortgage loans
100	Corporate loans, corporate bonds, less developed country debt, real estate, plant and equipment

BASEL I



The add-on amount is an allowance for the possibility of the exposure increasing in the future.

Add-on Factors as a Percentage of Principal for Derivatives

Remaining Maturity	Interest Rate	Exchange Rate & Gold	Equity	Precious Metals	Other Commodities
< 1	0.0	1.0	6.0	7.0	10.0
1 – 5	0.5	5.0	8.0	7.0	12.0
> 5	1.5	7.5	10.0	8.0	15.0

BASEL I



- Numerical Example1:
- If a bank buys a 500 EUR corporate bond on the capital market, the required capital to cover the risk associated would be:
- $500 \text{ EUR} \times 100\%$ (the weight for a claim on a corporate bond) $\times 8\% = 40\text{EUR}$

BASEL I



- Numerical Example2:
- Suppose that the assets of a bank consist of \$200 million of loans to corporations, \$20 million of OECD government bonds, and \$100 million of residential mortgages. Then RWA would be;
- $RWA = (1 \times 200) + (0 \times 20) + (0.5 \times 100) = 250$

1996 Amendment



- Requires banks to measure and hold capital for market risk for all instruments in the trading book including those off balance sheet (This is in addition to the BIS Accord credit risk capital)
- Total Capital Requirement = $0.08 \times (\text{Credit Risk RWA} + \text{Market Risk RWA})$

1996 Amendment



- Market Risk Capital is;

$$k \times \text{VaR} + \text{SRC}$$

Where k is a multiplicative factor, VaR is the 99%, 10-day value at risk, and SRC is the specific risk charge related to specific companies.

- Banks usually calculates 1-day VaR, in order to look at 10-day VaR, one can easily multiply by the square root of time. So 10-day would be;
 $1\text{-day VaR} \times 10^{0.5} = 10\text{-day VaR}$
- Back-testing is applied to determine the level of “ k ”.

BASEL II - 1999



- The Basel II Framework (the official name is "International Convergence of Capital Measurement and Capital Standards: a Revised Framework") is a new set of international standards and best practices that define the minimum capital requirements for internationally active banks. Banks have to maintain a minimum level of capital, to ensure that they can meet their obligations, they can cover unexpected losses, and can promote public confidence.

BASEL II



BASEL II Framework

Financial Stability – Better risk management

Pillar I:

Minimum Capital Requirements

Pillar II:

Supervisory Review and Internal Assessment

Pillar III:

Market Discipline

BASEL II



- **Pillar 1** has to do with the calculation of the minimum capital requirements. There are different approaches:
 - The Basic Indicator Approach
 - The standardized approach to credit risk.
 - The Internal Ratings-Based (IRB) approaches to credit risk.
- **Pillar 2** covers the Supervisory Review Process. It describes the ability to hold additional capital for risk assessment above and beyond Pillar I.
- **Pillar 3** covers transparency and the obligation of banks to disclose meaningful information to all stakeholders. Clients and shareholders should have a sufficient understanding of the activities of banks, and the way they manage their risks.

BASEL II



- Basel II Risks:

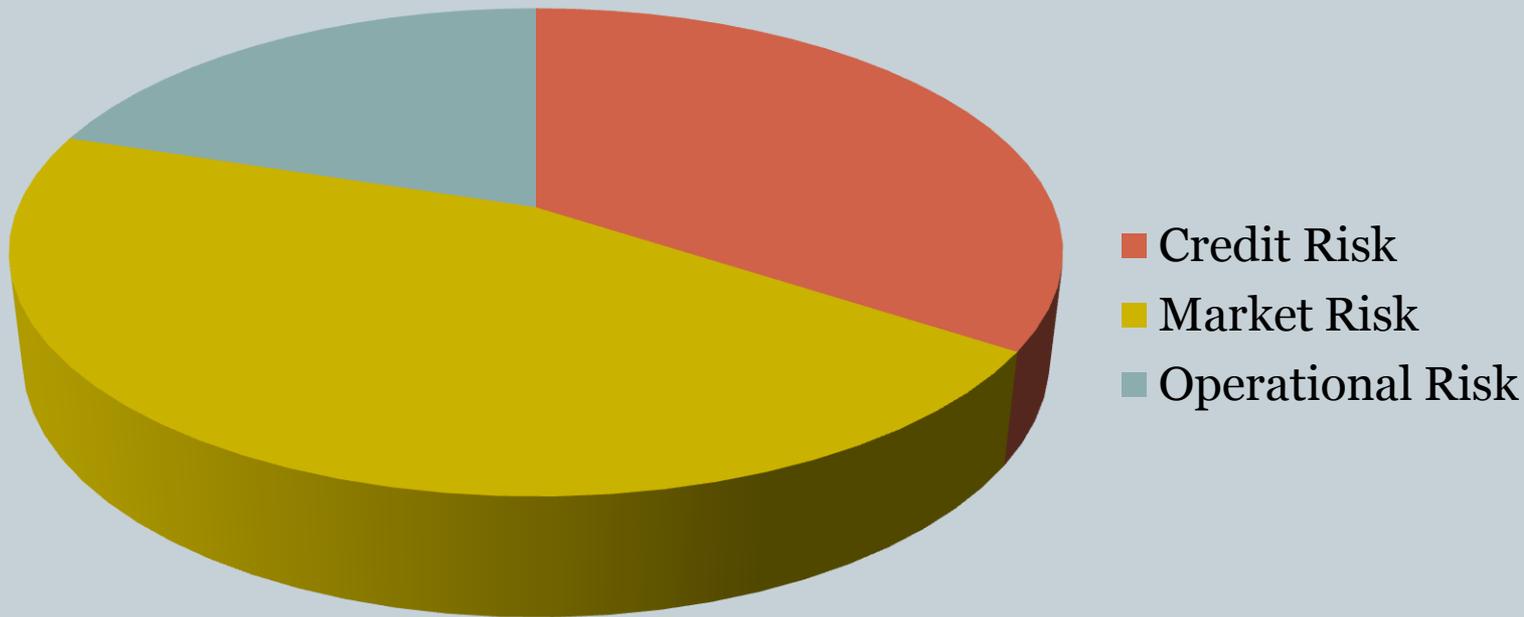
The accord recognizes three big risk buckets: credit risk, market risk and operational risk. In other words, a bank must hold capital against all three types of risks. A charge for market risk was introduced in 1998. The charge for operational risk is new and controversial because it is hard to define, not to mention quantify, operational risk.

- Operational risk is the risk of loss resulting from inadequate or failed internal processes, people, and systems, or from external events.

BASEL II



Basel II Risks



Total Capital Requirement = $0.08 \times (\text{Credit Risk RWA} + \text{Market Risk RWA} + \text{Operational Risk RWA})$

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- As we have said there are 3 different approaches for operational risk;
 - The Basic Indicator Approach
 - The standardized approach to credit risk.
 - The Internal Ratings-Based (IRB) approaches to credit risk.

Banks differ to use those 3 approaches. The simplest and cheapest approach is the first one. It sets the operational risk capital equal to the bank's average annual gross income over the last three years multiplied by 0.15 .

BASEL II



New Capital Requirements (Standardized Approach)

Ratings	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ to B-	Below B-	Unrated
Country	0%	20%	50%	100%	100%	150%	100%
Banks	20%	50%	50%	100%	100%	150%	50%
Corporations	20%	50%	100%	100%	150%	150%	100%

Retail 75%, residential property 35%, and commercial real estate 100% are used.

Standardized approach applies different percentage for each business line. Unrated sectors are still problematic.

BASEL II



- Numerical Example 3:
- Let's assume that the assets of a bank consist of \$200 million of loans to corporations rated A, \$20 million of government bonds rated AAA. And \$100 million of residential mortgages. Then RWA would be;
- $RWA = (0.5 \times 200) + (0 \times 20) + (0.35 \times 100) = 135$
- Observe the change between example 2 and 3

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- **Many things we did not mention yet:**
 - Stress testing
 - Credit Risk Mitigation (CRM)
 - Probability of Default (DF), Loss Given Default (LGD), Exposure at Default (EAD)
 - Internal Rating-Based Advanced (IRBA) approach
 - Internal Rating-Based Foundation (IRBF) approach
 - Worst Case Default Rate (WCDR)
- **Overall calculations and methods are much more complex to apply on the field.**

Conclusion



- We firstly looked at why we need a regulator in the banking sector.
- Then, we checked how to calculate the minimum capital a bank is required to hold.
- Thirdly, we have observed the change in calculation of capital requirement since 1980s.
- Although we have been applying Basel II, why did we end up with a recession?
- More risk calculations needed and off-balance-sheet items must be strictly followed. Internal models should be reduced.

Further Research & Study



Further Research & Study



- **BASEL III**
(coming soon.....)

END



Questions

&

Answers