



# Banking Risk Management and Basel II

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# Roger W. Ferguson, Jr.,

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- “Banks survive and prosper by accepting risk
- Nonetheless, risk must be well managed
- Banking is a highly leveraged and, in many respects, low-margin business
- Although a few failures are the product of fraud, the key risk in banking remains credit risk “

# BIS vs Basel

- The Bank for International Settlements,
  - runs Basel Committee on Banking Supervision,
  - formulates supervisory standards and best practice,
  - no supranational authority (with local regulators).
- Not a regulatory body but ...
  - applied by G10 to major international banks,
  - used by most of the rest of the world as standard,
  - Established in 1930, head office Basel.
- Basel Capital Accord (Basel I),
  - established in 1988,
  - set minimum standards of capital adequacy,
  - New Capital Accord (Basel II) proposed in 1999.

# The Basel Capital Accord (1988)

- Introduced to:
  - Promote world financial stability by coordinating supervisory definitions of capital, risk assessment, and a standard for capital adequacy across all countries.
  - Link a banks capital requirements systematically to the risk level of its activities, including various off balance sheet forms of risk expense.

# Problems

- Regulatory measures of weighted bank risk can differ substantially from the actual risk a bank faces.
- Gives banks incentive to move high quality assets off the balance sheet.
- Does not sufficiently recognize credit risk mitigation techniques such as collateral and guarantees.

# Limitations of Basel '88

## Basel '88

- Broad classes of assets assigned “risk weightings”
- Regulatory capital established as a % of risk weighted assets (currently 8%)
- Regulatory capital established at bank level
- Regulatory capital assigned based on credit and market risk



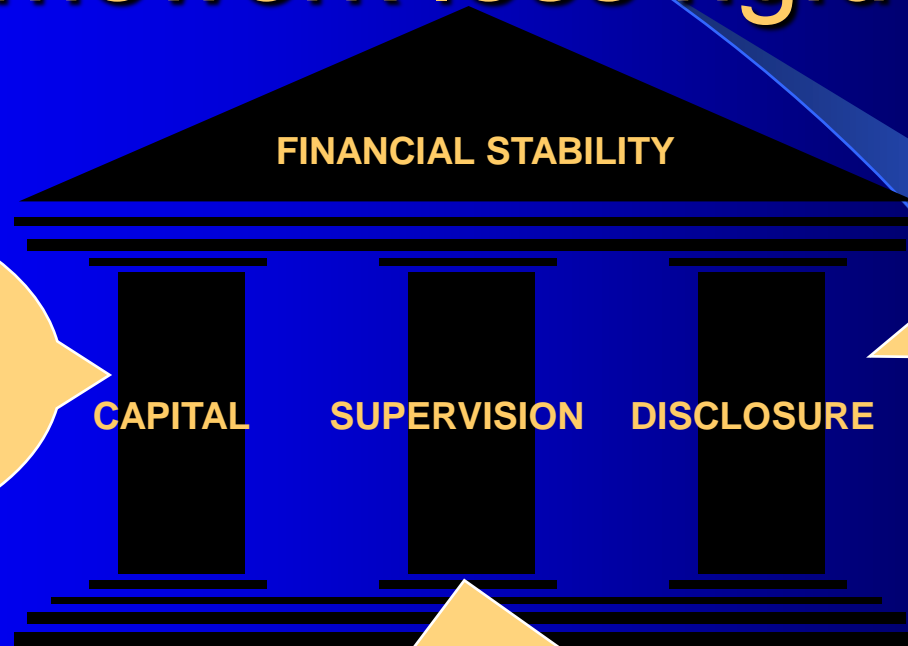
## Issues

- Lacks flexibility and risk sensitivity
  - Focus on a single risk measure
  - One size fits all approach
- Top down approach – difficult to assign capital at the transaction level
- Incomplete measure of risk – ignores operational risk

# THE NEW BASEL CAPITAL ACCORD

- *It was agreed in 2000 that the whole accord needed to be revamped to address operational risk and other concerns. To accomplish this, a draft was finished at the beginning of 2001 and released for comments. Several hundred comments were filed, which pushed the final accord's completion date to the end of 2002, with the implementation date tentatively set for 2005*

# Basel II makes its solvency framework less rigid ....



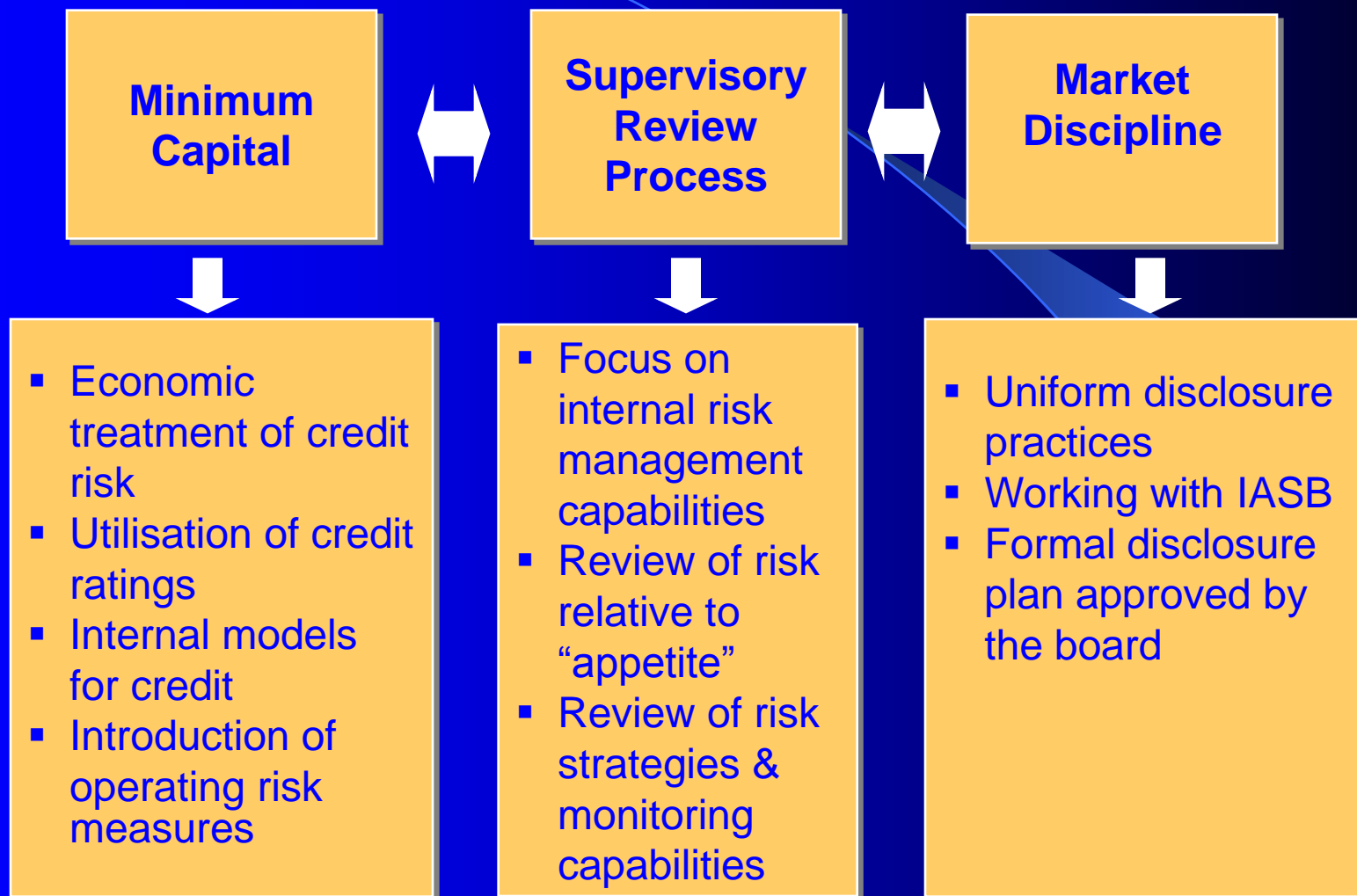
capital requirements based on market, credit, and operational risk

disclosure including the control of risks

qualitative supervision of internal process of risk control

.... by aligning it with the real risks banks run

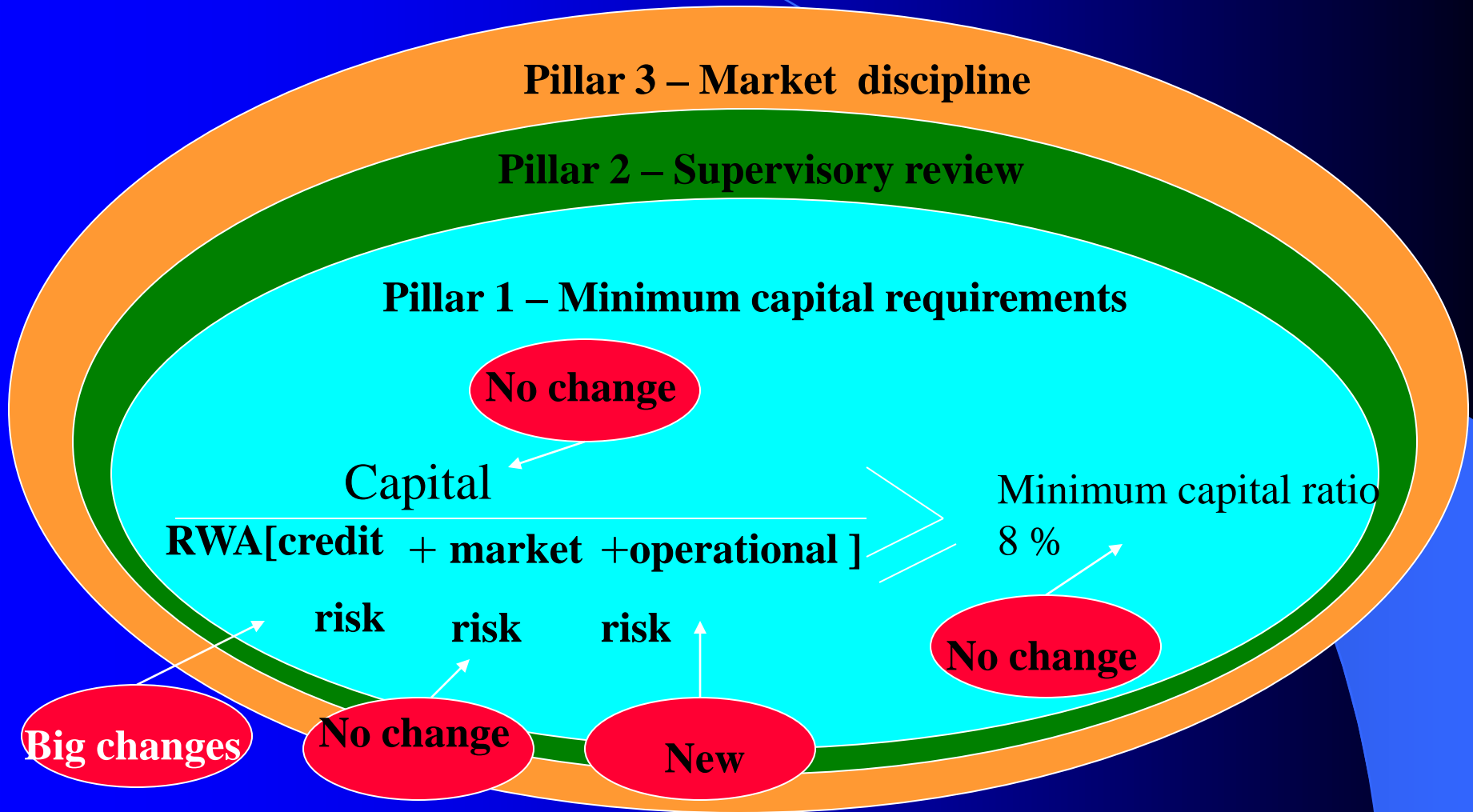
# The “Three Pillars” of Basel



# Structure of the new Accord: Three pillars of the new Accord

- First pillar: minimum capital requirement
- Second pillar: supervisory review process
- Third pillar: market discipline

# Capital Adequacy in a Nutshell



# Minimum Capital Requirements

How capital adequacy is measured:

- The banks' capital ratio(min 8%)=

Total Capital(unchanged)

credit risk+market risk+operational risk

# Supervisory review process

## Four key principles:

- *1) Banks should have a process for assessing their overall capital in relation to their risk profile and a strategy for maintaining their capital levels.*
- *2) Supervisors should review and evaluate banks' internal capital adequacy assessments and strategies, as well as their ability to monitor and ensure their compliance with regulatory capital ratios. Supervisors should take appropriate supervisory action if they are not satisfied with the results of this process.*

# Supervisory review process

- *3) Supervisors should expect banks to operate above the minimum regulatory capital ratios and should have the ability to require banks to hold capital in excess of the minimum.*
- *4) Supervisors should seek to intervene at an early stage to prevent capital from falling below the minimum levels required to support the risk characteristics of a particular bank and should require rapid remedial action if capital is not maintained or restored.*

# Market Discipline

- Aim is to bolster market discipline through enhanced disclosure by banks
- Disclosure requirements and recommendations:
  - Calculation of capital adequacy
  - Risk assessment methods

# Potential Problems

- Many believe that the new proposal fails to address some important issues.
- Fail to recognize risk as endogenous.
- Problems with Value-at-Risk methodology.
- Distribution of credit, market and operational risk are all heavily tailed.

# Potential Problems

- Statistical models for forecasting risk have been proven to be inconsistent and biased.
- Credit agencies have been shown to provide conflicting, and inconsistent forecasts.
- The new proposal relies heavily on these.

# Potential Problems

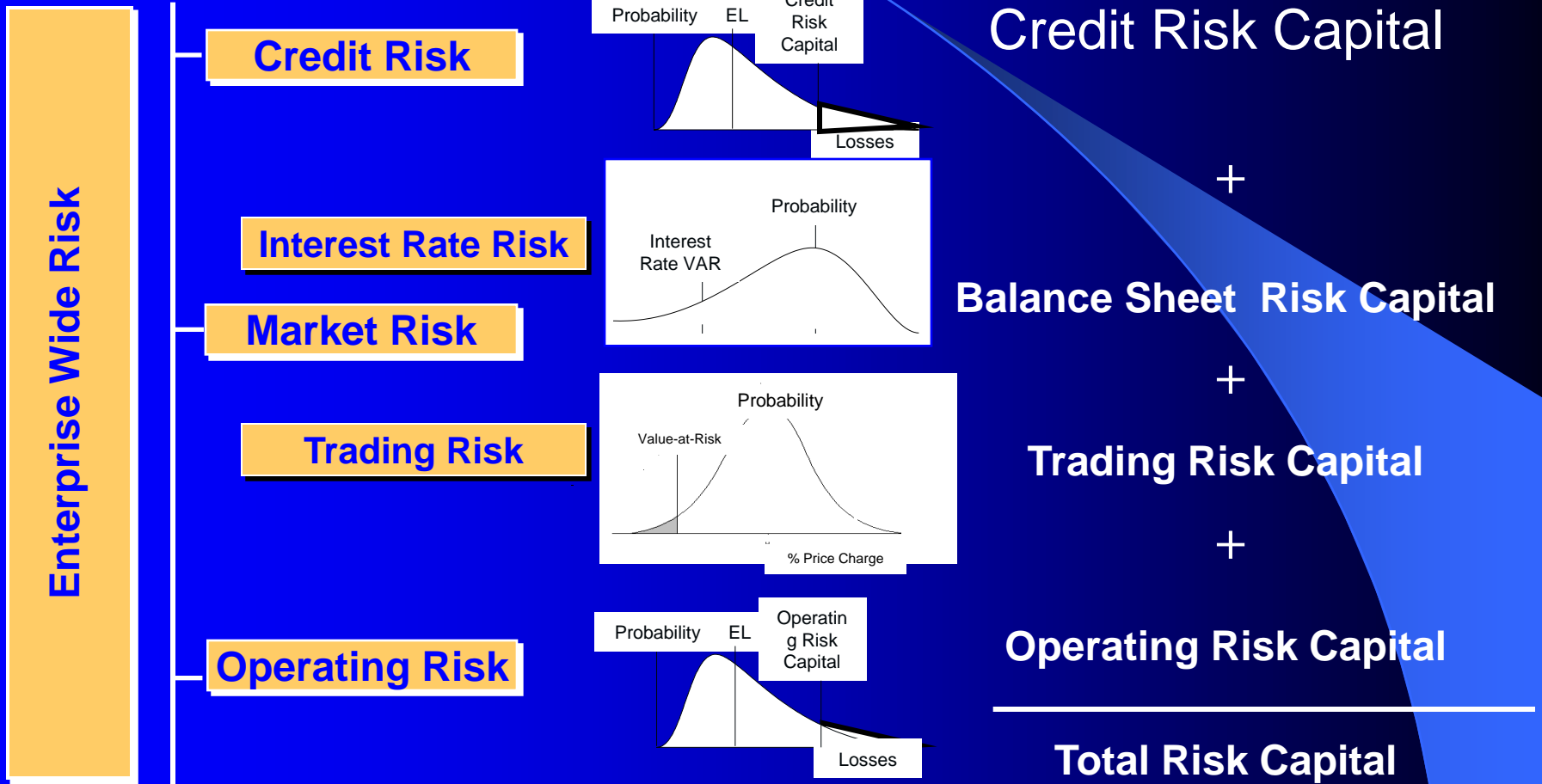
- Assets with different risk profiles tend to be lumped together into the same minimum capital requirement class.
  - Banks get more risky
  - Potential for an increase in frequency, and severity of IMF bailouts.

# Potential Problems

- Mergers and acquisitions between financial institutions has been accelerating. Too-big-to-fail.
- The emergence Hedge Funds. Very High Risk.

# Risk vs. Capital

The bottom up approach to economic capital allocation involves understanding the credit, market and operational risk associated with a given transaction



# Credit Risk

- Risk of a trading partner not fulfilling his obligations in full
  - Traditional instruments such as loans, bonds or currency trading
    - full or principal amount of the instrument
  - Derivatives
    - cost of replacing the contract if the counterparty defaults
    - made up of current replacement and potential replacement costs

# Operational Risk is still a relatively new area

## Risk Management Lifecycle



# Choice in calculation

	Basic	Intermediate	Advanced
Credit risk	<p><b>“Standardised”</b></p> <p>Successor to the 1988 Accord with some additional sensitivities</p>	<p><b>“Foundation”</b></p> <p>Internal rating based approach</p> <p>Portfolio split by category of exposure – input from institution and regulator.</p>	<p><b>“Advanced”</b></p> <p>Internal rating based approach</p> <p>As for Foundation but all parameters calculated by institution (75% floor).</p>
Market risk	<p><b>No major change to current approach</b></p>		
Operational risk	<p><b>‘Basic Indicator Approach’</b></p> <p>Capital charge based on single risk indicator.</p>	<p><b>‘Standardised Approach’</b></p> <p>Capital charge based on sum of 8 Business Line risk indicators, each calculated by defined industry standards ( <math>\alpha</math> ).</p>	<p><b>‘Advanced Measurement Approach’</b></p> <p>Capital charge by Business Line, internally calculated and variable on level of risk ( <math>\beta</math> ).</p>

# Credit risk: IRB approach

## Credit risk components

- Probability of Default(PD)  
Likelihood of a default, expressed as a%
- Loss Given Default(LGD)  
Magnitude of loss, expressed as a %
- Exposure at Default(EAD)  
Bank's exposure amount in dollar terms
- Maturity(M)

# Liquidity Risk

- Risk of a bank having insufficient funds on hand to meet its current obligations

# Market Risk

- Risk of capital loss resulting from adverse market price movements related to investments in commodity, equity, fixed interest, or currency markets

# Foreign Exchange Risk

- Risk of adverse exchange rates movements, due to the mismatch between foreign receivables and payables

# Interest Rate Risk

- Risk of changes in interest rates that will have an adverse effect on a bank's income and/or expenses

# Settlement Risk

- Settlement risk is the risk that a settlement in a transfer system does not take place as expected
- One party defaults on its clearing obligations to one or more counterparties

# Other Risks

- **Gearing Risk**
- **Cash Flow Risk**

# Operational risk

The risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events

- includes legal risks
- Excludes reputational and strategic risks

# Operational risk: examples

- Fraud
  - insider trading, misappropriation of assets
- Natural disasters
  - earthquake, terrorism
- System related failures
  - power down, technical breakdowns

# Operational risk: advantages

- Basel I covers in terms of credit risk
- Potential operational risks significant and rising (Toronto blackout)
- Pillar 1 requirement, operation risk has been a major contributor to depletion of capital and failure of banks
- The work on operational risk is in a developmental stage
- Operational risk should be an important component of firm-wide risk

# Operation risk: capital requirement

Basic indicator Approach	15% of gross income
Standardised Approach	Different percentages(12-18%) applied to eight different business segments
Advanced Measurement Approach (AMA)	Generated by bank's own operational risk measurement systems (subject to satisfying min supervisory standards)

# Capital Adequacy is only part of Basel II

- Pillar 2 has two objectives:
  - a) compliance to the higher approaches to capital calculations,
  - b) sound integrated risk management systems and controls.
- All regulated organisations must develop:
  - a) an appropriate risk management environment,
  - b) risk identification, assessment, monitoring and mitigation/control,
  - c) regular independent evaluation of policies, procedures and practices.
- ... and make sufficient public disclosure to allow the market to assess their approach to operational risk management.

# Valuing Derivatives

- Current replacement cost
  - Basle Committee recommends current replacement cost (current mark-to-market value of the contract)
- Potential replacement value
  - Basle Committee recommends multiplying the notional principal of a transaction by an appropriate percentage
  - Derivatives industry prefer modelling the volatility of the underlying variables and the effect of movements on these variables on the value of the derivatives contract

# Credit risk: mitigation

A range of techniques where by a bank can partially protect itself against cp default

- Collaterals

bank cash account, gold deposits, shares and bonds

- Balance netting (or pooling)

allows you to offset a balance sheet asset position by a liability position

- Third party guaranties

rating >A-, can be deducted by weighted amount

- Securitisation

Allows bank to transfer its credit risk to a third party in the market in exchange of compensation

# Securitisation

## Definition:

- These are operations structured in tranches that reflect different degrees of credit risks,
  - ...where payments to investors depend upon the performance of the underlying credit exposures,
  - ...and operations that do not satisfy the definition of specialised lending.
- The new framework concern all securitisation transactions, traditional or synthetic, using the standardised or the Internal ratings-based approaches.

# Securitisation

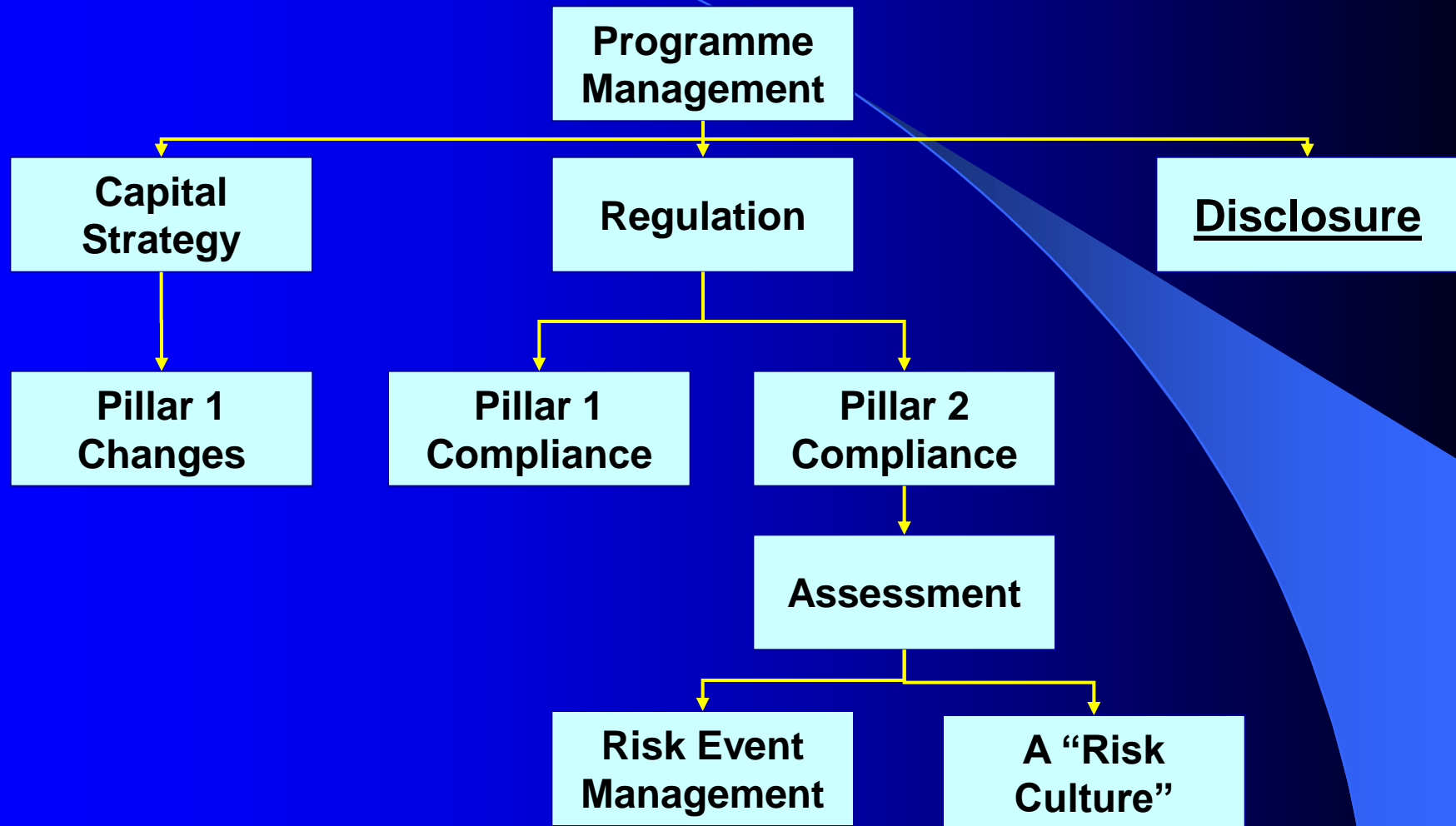
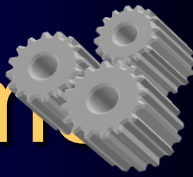
To get capital relief, originating banks must meet operational requirements and achieve risk transfer (the “**clean break**” criteria).

- For **traditional securitisation**, the assets must be legally or economically isolated from the bank, for example sold to a special purpose vehicle, and the originator must not maintain effective or indirect control over the sold assets;
- For **synthetic securitisation**, credit derivatives used to transfer credit risk must meet the requirements for credit risk mitigants; a significant portion of credit risk must be transferred; and the instruments used must not contain provisions that eliminate or limit credit risk transfer.

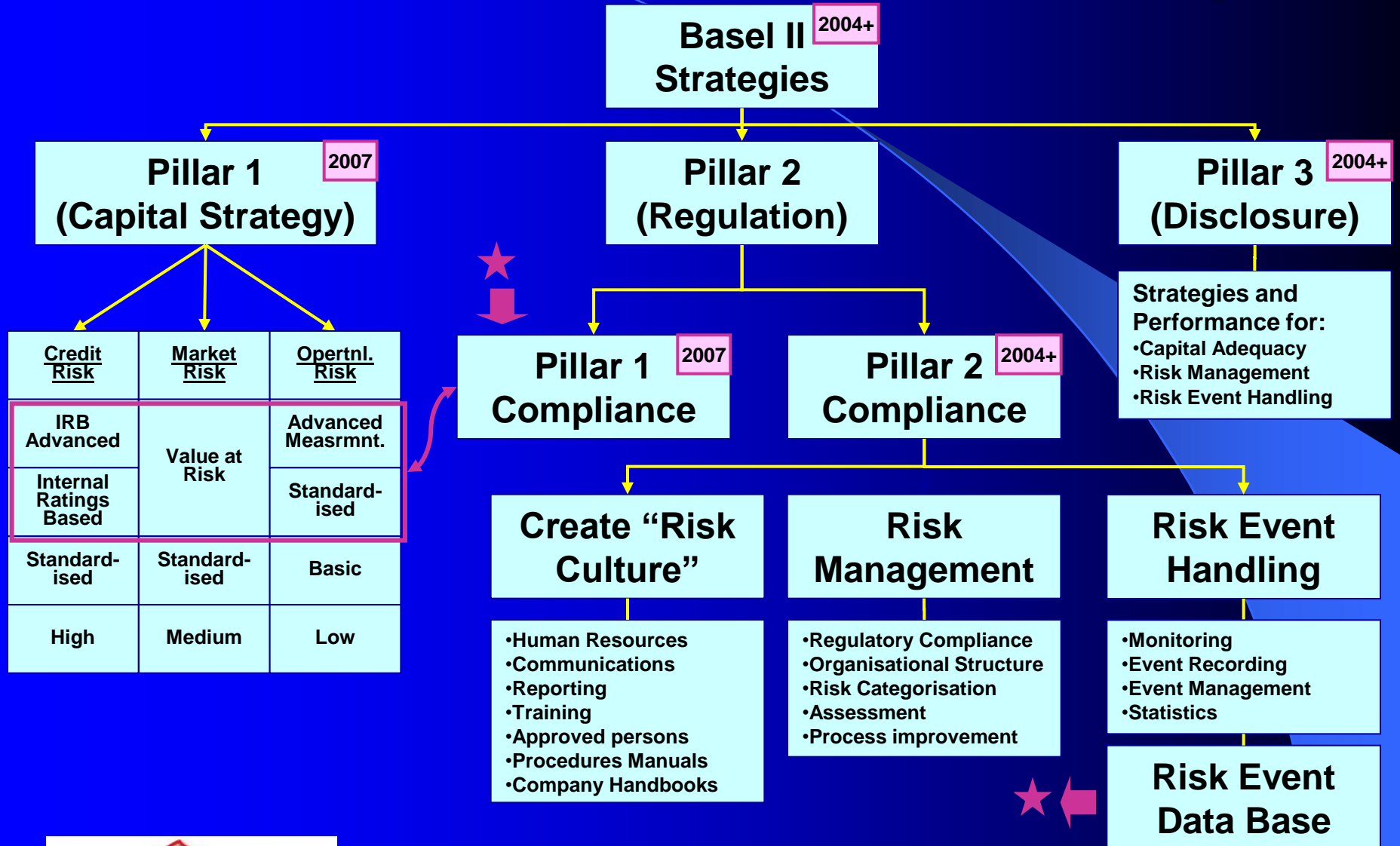
# Risk Assessment

- Quantity of Risk,
- Quality of Risk Management,
- Aggregate Risk
- Direction of Risk.

# A Co-ordinated Programme



# Basel II, in Summary



# Risk Management

## Must Measure & Optimize All Types of Risk Capital



### Physical Risk

Physical Assets  
Real Estate  
Manufacturing Process  
Supply Chain

### Operational Risk

Jurisdiction Risk  
Settlement Risk  
Systems Risk  
Employee Risk  
Strategic Decision Risk  
Purchasing Risk

### Financial Risks

### Sales Risk

Competition Risk  
Elasticity Risk  
Predictive Risk

### Strategic Risk

Regulatory Risk  
Tax Risk  
Catastrophe Risk  
Currency Policy

### Cpty/Credit Risk

Default risk  
Downgrading

### Market Risk

Price risk (int. rate, ccy, equity, commodity)  
Curve risk  
Basis risk  
Correlation risk  
Option specific risk

### Liquidity Risk

Funding Risk  
Market Liquidity

# Coming in August

- Implications of the Dodd-Frank Act

# Questions?

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