Basel Capital Standards : An Overview

17 April 2014

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BANK NEGARA MALAYSIA
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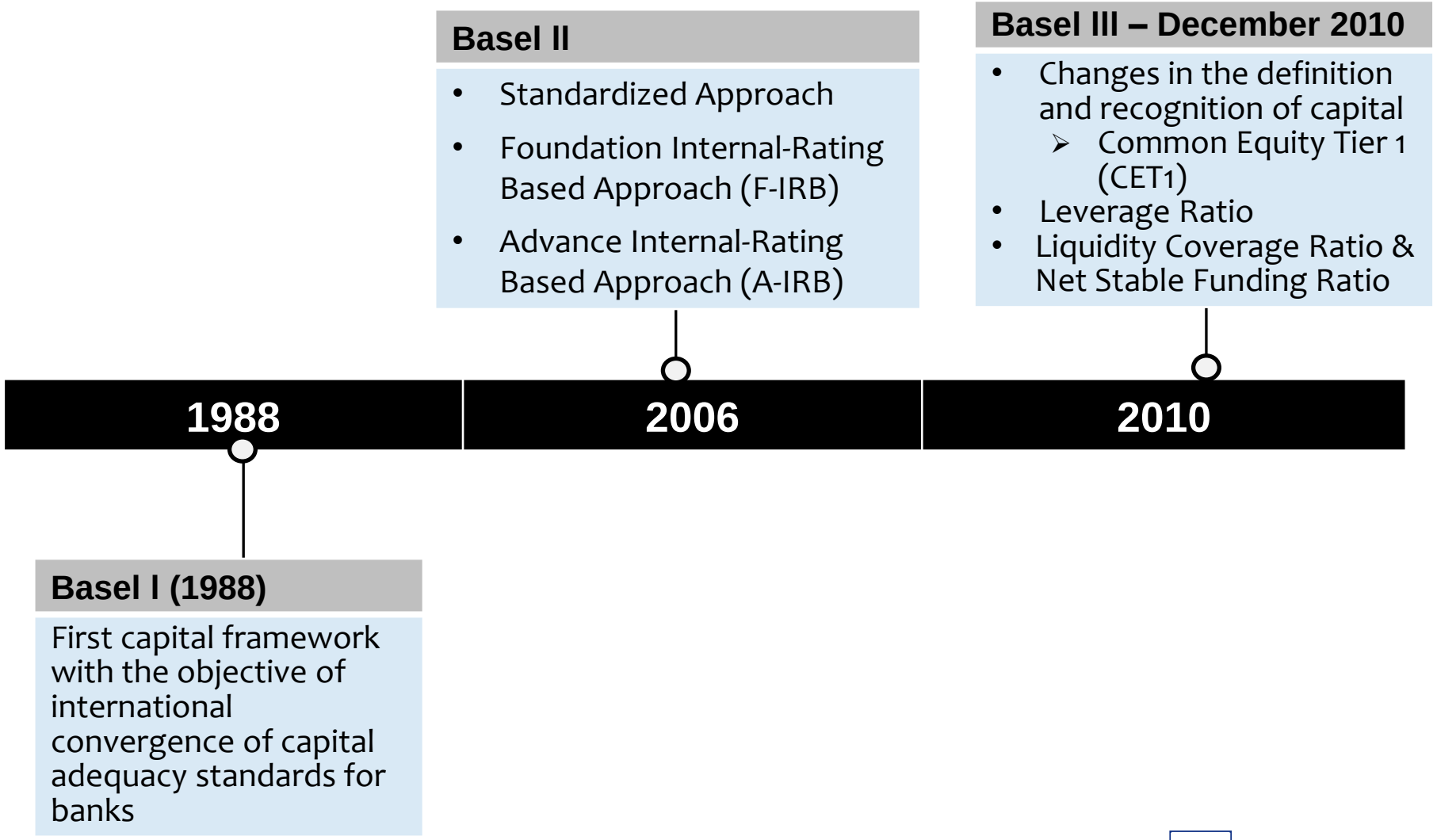
Session Outline

- Basel Implementation Overview
- Basel I Capital Framework
- Basel II Capital Framework
  - The 3 Pillars under Basel II
  - Standardized Approach (SA)
  - Internal-Ratings Based Approach (IRB)
- Basel II Implementation in Malaysia
- Basel III

Basel Implementation Overview - Malaysia



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Basel I Capital Framework : An Overview

Basel I (or the 1988 Basel Accord) is straight forward and easy to implement…

The classification of risk weight is kept as simple as possible and only **SEVEN** risk weights.

Example of On-balance sheet items according to its risk weight (as per BNM guidelines);

Risk Weight	On-Balance Sheet Items
0%	• Cash / claims collateralized by cash; • Exposure to the Federal Government, OECD central governments and central banks
10%	• Holdings of National Mortgage Corporation (NMC) debt securities and other claims on NMC
20%	• Exposures to banks in Malaysia and OECD countries
35%	• Performing loans secured by mortgages on residential propoerty with LTV of less than 80%
50%	• Other performing loans secured by mortgages on residential property
100%	• Claims on banks outside OECD with maturity > 1 year • Investment in shares • Other assets
150%	• Claims on corporates rated below BB-

include element of Basel II SA

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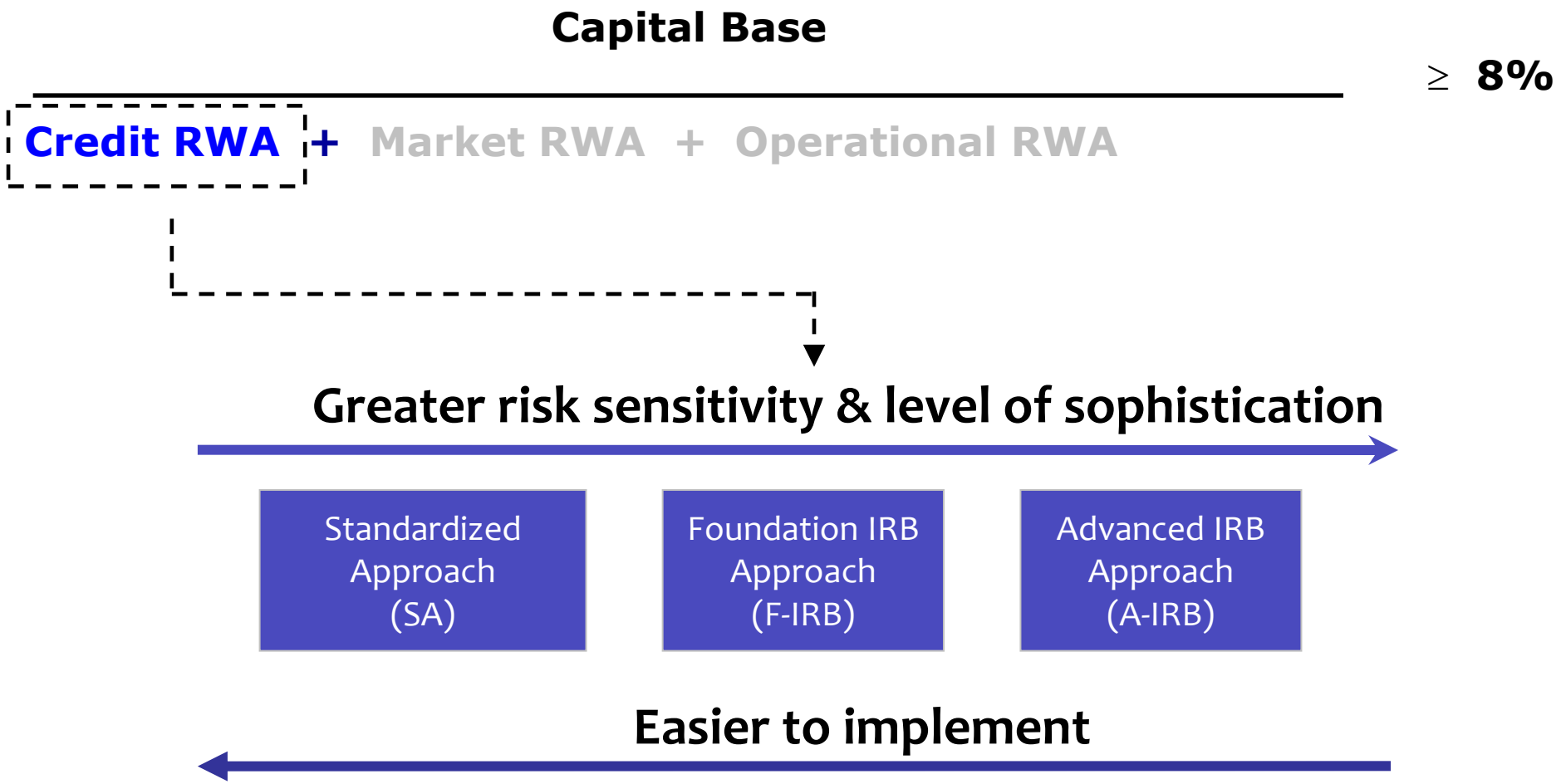
Basel I (or the 1988 Basel Accord) is straight forward and easy to implement…

…….but comes with the following notable weaknesses:

- Capital adequacy assessment does not reflect banks' true risk profile
  - One size fits all institutional approach does not encourage sound risk management
  - Banks have become more complex and innovative, hence the need for better risk management
- Presents a broad-brushed risk weighting structure
  - e.g sovereigns based on OECD and Non-OECD, underestimates underlying risk and does not differentiate the risk profile sufficiently between banks
- Overly simplified which enable banks to structure transactions to minimise regulatory capital
- Covers only credit and market risks

How does the Pillar 1 component of Basel II compare to Basel I



Good things about Basel II, especially IRB approaches

- Greater risk, greater capital amount
- Incentive for banks to improve risk management functions (risk-adjusted capital allocation, risk-adjusted pricing) and 'risk culture'
- Instill better discipline in loan underwriting
- At macro level, to achieve better balance between lending efficiency & safety

Basel II Capital Framework : An Overview

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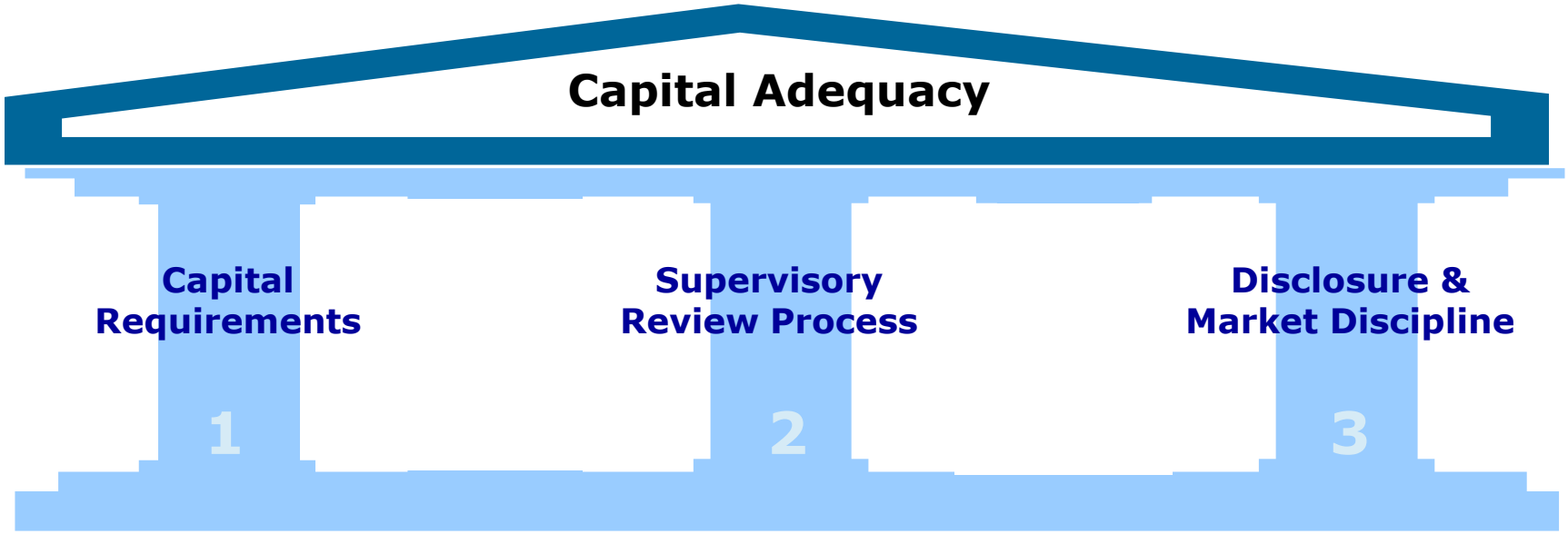
The 3 Pillars under Basel II



Basel II is based on a 3 Pillars which are complementary

- **Pillar 1** - the minimum regulatory capital for the credit risk, market risk (excluding IRRBB) and operational risk.
- **Pillar 2** - Internal Capital Adequacy Assessment Process (ICAAP)
- **Pillar 3** - disclosure in 'regulating' banks' behaviour and promoting market discipline

The 3 Pillars under Basel II

Three Pillar approach

Pillar 1 : Minimum regulatory capital

- Credit , market and operational risks
- Choice between Standardised Approach (SA) and Internal Ratings-Based Approach (IRB)

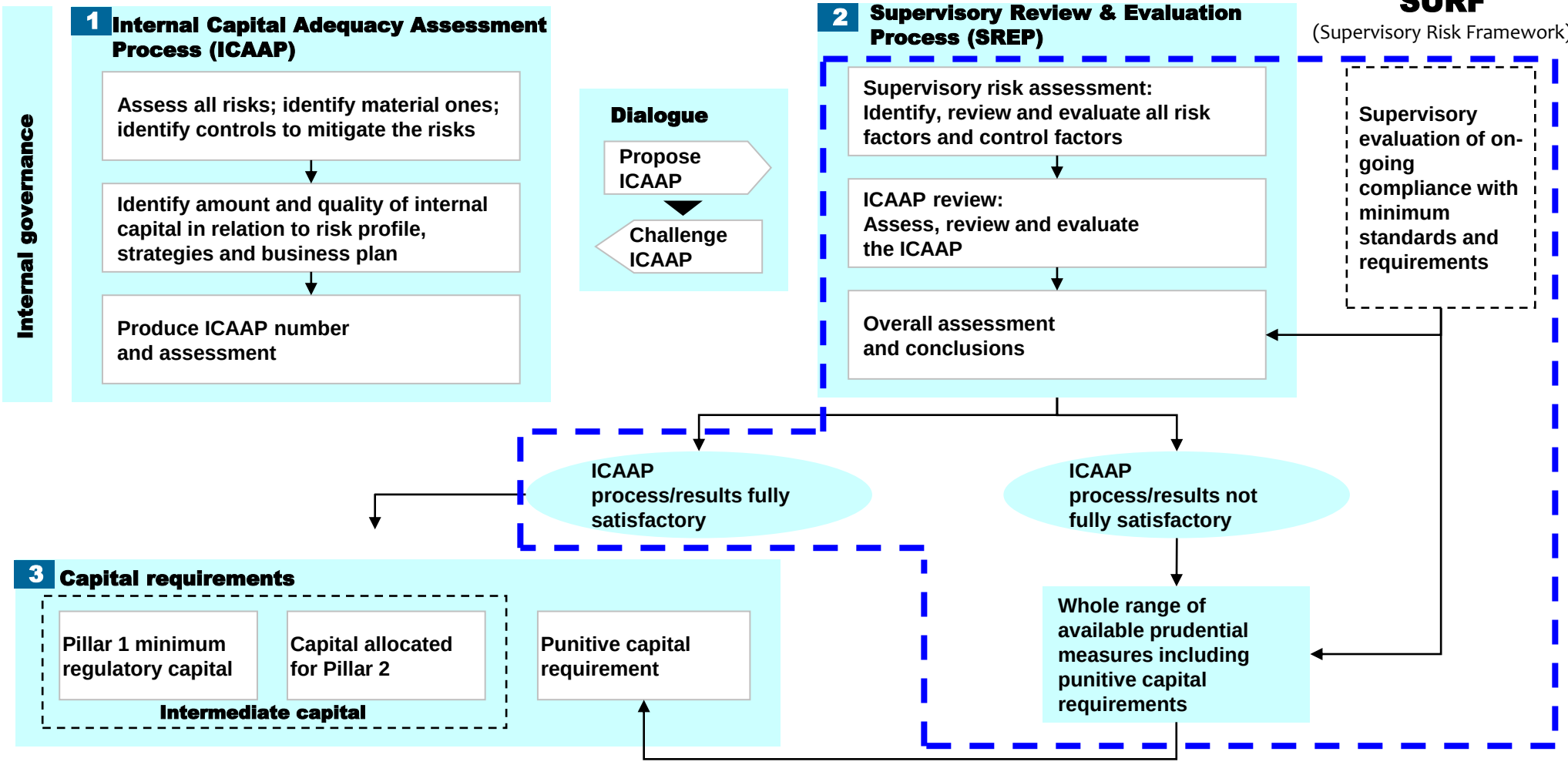
Pillar 2 : Supervisory Review Process

- Banks must have internal processes and strategies in place to ensure adequacy of capital (ICAAP)
- Supervisors to review banks ICAAP and ability to comply with minimum regulatory capital – Supervisory Review and Evaluation Process (SREP)
- Banks to operate above the minimum regulatory capital
- Early supervisory intervention to prevent capital from falling below minimum regulatory capital

Pillar 3 : Market Discipline

- Complements minimum capital requirement and SREP
- Disclosure requirements to enable market participants to have better insight to assess banks capital adequacy

Pillar 2 : Enhancing SREP element in the supervisory framework



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Salient Features of SA, FIRBA & AIRBA

Standardized Approach

Main features;-

i. Given supervisory-prescribed RWs,

ii. Eligible collateral under Credit Risk Mitigation (CRM) and ,

iii. Credit Conversion Factor (CCF)

- RW – may subject to supervisory review (e.g., recent update on PL > 5-yr)
- Use of External Credit Assessment Institutions (ECAI) for sovereigns, banking institutions and corporates to determine RWs
- Specific RWs for loans secured by residential properties, regulatory retail portfolio, defaulted exposures, other assets

FIRBA & AIRBA

Main features;-

i. Risk components [i.e., probability of default (PD), loss-given-default (LGD) and exposure at default (EAD)]

ii. Minimum requirements (quantitative & qualitative)

- Requires supervisory review & approval before implementation
- Relies on bank's internal assessment methodologies of its counterparties & loss
- For less significant portfolios, may apply the SA – generally called 'Exempted Exposures'

Recognition of ECAI under BNM Basel II RWCAF

Domestic rating agencies

i. Rating Agency Malaysia Berhad

ii. Malaysian Rating Corporation Berhad

Foreign ECAIs' external ratings

i. Standard & Poor's Rating Services

ii. Moody's Investors Service

iii. Fitch Ratings

Basel II Standardized Approach: An Overview

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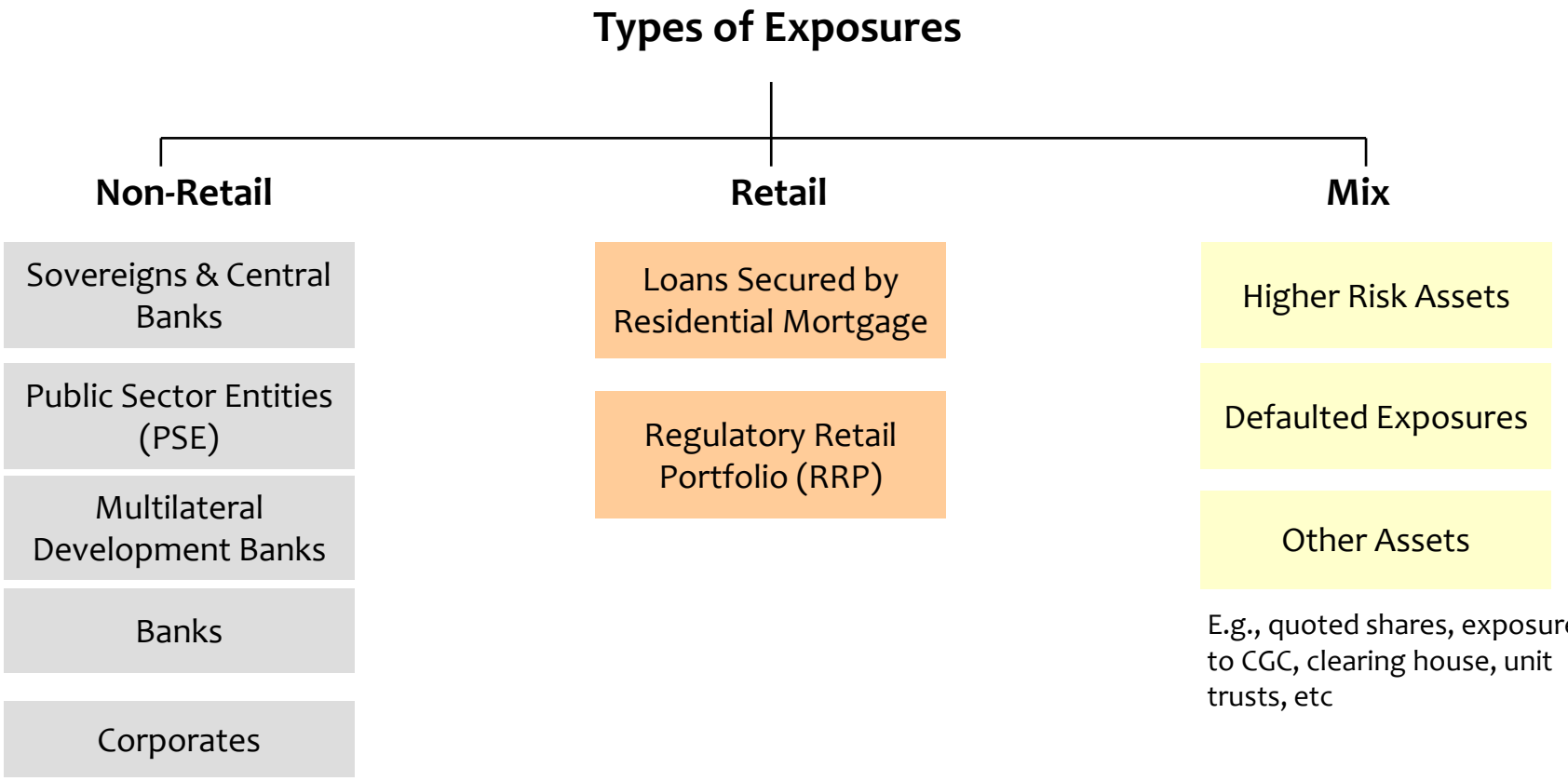
Credit Exposures are Categorized & Clustered to differentiate credit risk



Within an exposure class, credit risk is further differentiated via RW (e.g., the worse the ECAI rating, the higher the RW)

Basel II SA : Non-Retail Risk Weight

Sovereigns & Central Banks Risk Weight Table

Rating	S&P	Moody's	Fitch	Risk Weight
1	AAA to AA -	Aaa to Aa3	AAA to AA -	0 %
2	A+ to A -	A1 to A3	A+ to A -	20 %
3	BBB + to BBB -	Baa1 to Baa3	BBB + to BBB -	50 %
4	BB + to B -	Ba1 to B3	BB + to B -	100 %
5	CCC + to D	Caa1 to C	CCC + to D	150 %
Unrated				100 %

Corporate Risk Weight Table

Malaysia Local Rating Agency

Rating	S&P	Moody's	Fitch	RAM	MARC	Risk Weight
1	AAA to AA -	Aaa to Aa3	AAA to AA -	AAA to AA3	AAA to AA -	20 %
2	A+ to A -	A1 to A3	A+ to A -	A1 to A3	A + to A -	50 %
3	BBB + to BB -	Baa1 to Ba3	BBB + to BB -	BBB1 to BB3	BBB + to BB -	100%
4	B + to D	B1 to C	BB + to D	B1 to D	B + to D	150 %
Unrated						100 %

Basel II SA : Retail Risk Weight

Regulatory Retail Portfolio & Residential Property

<table>
<tr><th>Asset Class</th><th></th><th>Risk Weight</th></tr>
<tr><td rowspan="2">Regulatory Retail Portfolio (RRP)</td><td>Exposures that meet following criteria:
• Exposure to individual or person or to small business
• Revolving credit and lines of credit, personal term loans and other terms loans (e.g. auto loans, educational loans, etc)</td><td>75 %</td></tr>
<tr><td>Personal Loan with maturity tenure of > 5 yrs</td><td>100 %</td></tr>
<tr><td>Loans Secured by Residential Properties</td><td>Loans fully secured by mortgages on residential property, which are or will be occupied by the borrower, or is rented and meeting the following criteria
• Borrower is an individual person
• Loan secured by 1st legal charge, assignment or strata title on the property</td><td><table><tr><th>LTV</th><th>Risk Weight</th></tr><tr><td>< 80%</td><td>35%</td></tr><tr><td>80% to 90%</td><td>50%</td></tr><tr><td>Above 90%</td><td>100%</td></tr></table></td></tr>
<tr><td>Higher Risk Assets</td><td>• Non-publicly traded equity investment
• Residential mortgage loan for abandoned housing project
• Venture capital investment</td><td>150%</td></tr>
</table>

Revised in 2011

Basel II SA : Defaulted Exposures Risk Weight

Asset Class	Provision level (as % of gross outstanding amount)	Risk Weight
Qualifying residential mortgage loans	< 20%	100%
	≥ 20%	50%
Other than defaulted qualifying residential mortgage loans and Higher risk assets	< 20%	150%
	20% ≥ X > 50%	100%
	≥ 50%	50%

Default Definition : Key criteria

- Obligor is 'unlikely to repay' in full.
- Obligor has breached its contractual repayment schedule and is past due to more than 90 days.
  - National discretion
    i. HP, more than 120 days
    ii. Housing Loan 180 days
- Securities – breach of contractual repayment schedule
- Overdrafts – breached the approved limits for more than 90 days
- Where repayments are scheduled on three months or longer, a default occurs immediately upon breach of contractual repayment schedule

Basel II SA : Off-Balance Sheet Exposures Treatment

- Nominal principal amount is converted to 'on-balance sheet exposure equivalent' using the following credit conversion factor (CCF)
- Then, the 'on-balance sheet exposure equivalent' is risk weighted using the appropriate RW

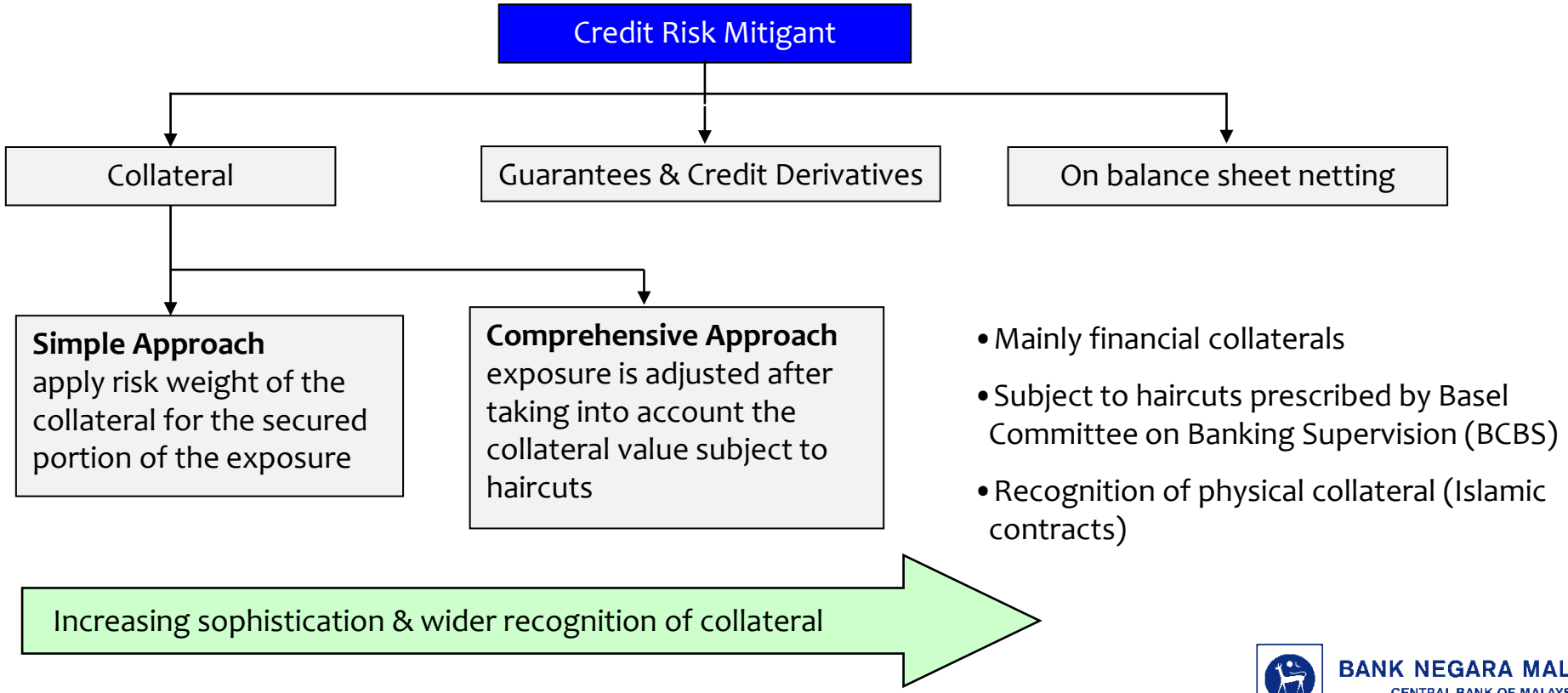
Example of instruments with CCF:

Instrument	CCF
Commitments that are unconditionally cancelled at any time by banks	0%
Credit line with original maturity of less than one year	20%
Unutilized credit card lines	20%
Credit line with original maturity of over one year	50%
Direct credit substitutes (eg, BG, SLC)	100%

Basel II SA : Credit Risk Mitigation (CRM)

Minimum operational requirements for all eligible collaterals

- **Legal certainty & enforceability** - the right to liquidate or take possession of collateral
- **Low correlation with exposure** - correlation between credit quality of the counterparty and value of collateral
- **Robust risk management process** - collateral is liquidated promptly



CRM - Examples of Simple Approach

Collateralized Loan

- 5 year term loan of RM 1.0 million to unrated corporate
- Secured by debt security issued by a bank rated AA by S&P which is subject to daily revaluation and is equivalent to RM1.05 million ,
- Denominated in EURO dollar,
- Remaining maturity of 7 years and,

Working:

RM1.0 mil, 5 yrs

Unrated corporate - RW 100%

Secured

RM1.05 mil , 7 yrs

Debt security (AA) – RW 20%

Risk Weighted Asset = RM200k
[RM1.0 mil x RW 20%]

CRM - Examples of Comprehensive Approach

1. **Determine Haircut**

   i. The standard supervisory haircut for debt securities with AA for banks is 8%

   ii. The standard supervisory haircut for currency mismatch is 8%

   iii. Holding period for secured lending is 20 days

Issue rating for debt securities/*sukūk*	Residual maturity	Sovereign	Other issues
AAA to AA-/A-1	≤ 1 year	0.5	1
	> 1 year, ≤ years 5	2	4
	> 5 years	4	8
Currency mismatch			8

Adjustment to standard supervisory haircuts for different holding periods and non-daily mark-to-market or re-margining

When the frequency of re-margining or revaluation is longer than the minimum, the minimum haircut numbers will be scaled up depending on the actual number of business days between re-margining or on the revaluation using the square root of time formula below:

Transaction type	Minimum holding period	Condition
Repo-style transaction	5 business days	Daily re-margining
Other capital market transaction	10 business days	Daily re-margining
Secured lending	20 business days	Daily revaluation

$$H = H_{10} \sqrt{[N_R + (T_M - 1)]/10}$$

H	Haircut
H_{10}	10-business day standard supervisory haircut for instrument
T_M	minimum holding period for the type of transaction
N_R	actual number of business days between re-margining for capital market transactions or revaluations for secured transactions

$$H = 8\% \sqrt{[1 + (20 - 1)]/10}$$

$$H = 11.3\%$$

H = 11% (rounded up to a percentage)

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CRM - Examples of Comprehensive Approach

2. Value of Exposure after CRM

$$\mathbf{E^*} = \max\{0, [E \times (1 + He) - C \times (1 - Hc - Hfx)]\}$$

- E*= the exposure value after risk mitigation
- E = current value of the exposure
- H_e haircut appropriate to the exposure
- C the current value of the collateral received
- $H_{c=}$ haircut appropriate to the collateral
- H_{fx} haircut appropriate for currency mismatch between the collateral and exposure

→ [RM1.0 mil x (1+0%) – RM1.05 mil x (1-11%-11%)]}

→ [RM1.0 mil x (100%) – RM1.05 mil x (78.0%)]

→ RM1.0 mil – RM819k

→ **RM181k**

Value of Exposure after CRM

RWA of the loan is RM181 X 100% = RM181K

Unrated corporate RW 100%

Currency mismatches
The supervisory haircut will be 8%. The haircut must be scaled up using the square root of time formula, depending on the frequency of revaluation of the credit protection hence the computation is similar with collateral haircut previously

Basel II Internal Ratings-Based (IRB): An Overview

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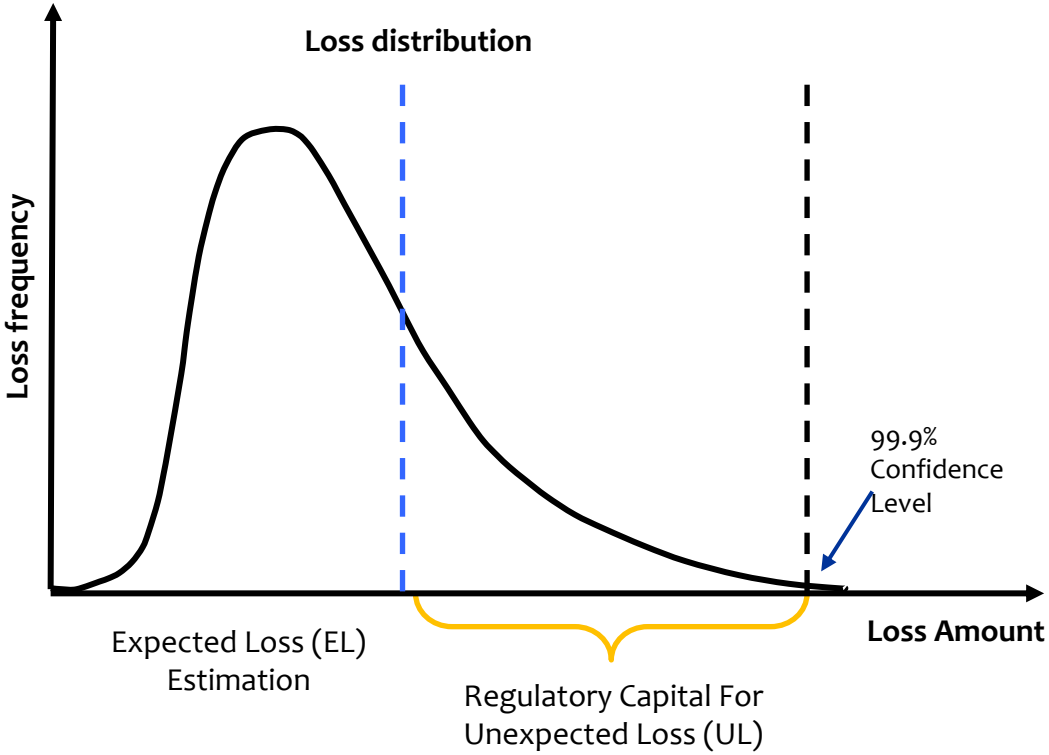
IRB Approach : Use of recent credit loss history



What is an internal rating?

- An indicator of risk of loss in a credit due to borrower's failure to pay as promised. This is assessed
  - Explicitly, through consideration of a measurable loss concept
  - Implicitly through expert judgment of general credit quality

What is an internal rating system?

- A rating system includes all the processes, procedures and IT systems that support the assignment of an internal rating.

Summary of IRB Approaches

Asset Class	Available Approaches	Estimates
Corporate (including specialised lending)	Foundation IRB (FIRB)	Own PD, **supervisory LGD**, EAD & M
	Advanced IRB (AIRB)	Own PD, LGD, EAD & M
Sovereign Bank	Supervisory slotting criteria (for specialised lending, where requirements for estimation of PD, LGD and EAD are not met)	Supervisory risk weights
Retail	Advanced only	Own PD, LGD, EAD & M
Equity in the banking book	Market based – simple risk weight	Supervisory risk weights
	Market based – internal models	Own value-at-risk measure
	PD/LGD	Own PD & supervisory LGD
Purchased receivables	Foundation (not available for retail receivables)	Own PD, supervisory LGD, EAD & M
	Advanced	Own PD, LGD, EAD & M

Basic Principles of IRB

- Separate approaches for different portfolios
- Relies on bank's internal assessment of its counterparties and exposures
- Based on three main elements
  i. Risk components (e.g. probability of default, loss-given-default)
  ii. Risk-weight function
  iii. Minimum requirement
- Subject to supervisory validation and approval

Key Components

Borrower/Obligor Risk	Probability of default (PD)
Transaction/Facility Risk	Loss Given Default (LGD)
Exposure	Exposure at Default (EAD)

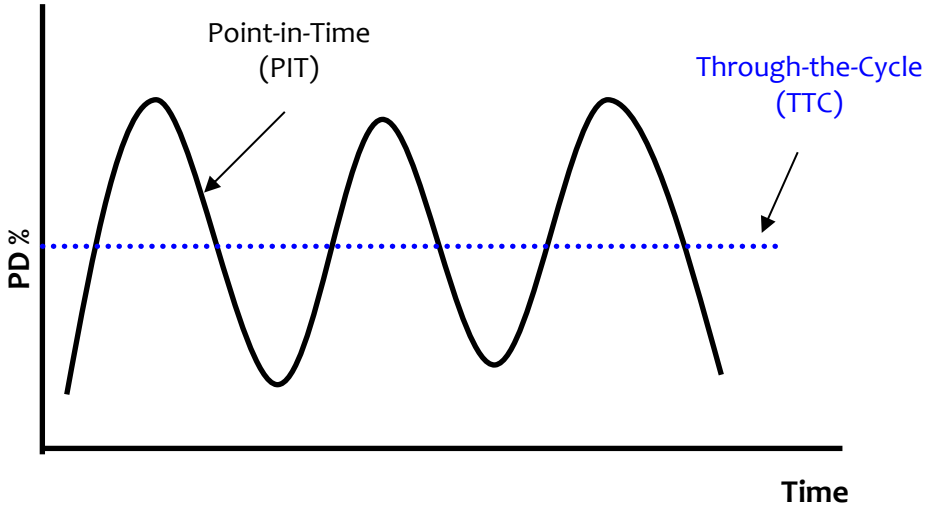
Other Important Elements

Maturity | Borrower size

Probability of Default (PD) Estimation

Default probabilities may be estimated:

- from a historical data base of actual defaults using modern techniques like logistic regression.
- from the observable prices of credit default swaps, bonds, and options on common stock.
- using external ratings agencies such as S&P, Fitch or Moody's for estimating PDs from historical default experience (the simplest approach)



- Through-the-Cycle (TTC) PD's are long-run probabilities of default which take into consideration upturns and downturns in the economy.
- Conceptually, it is the simple average, median or equilibrium of Point-In-Time (PIT) PD's

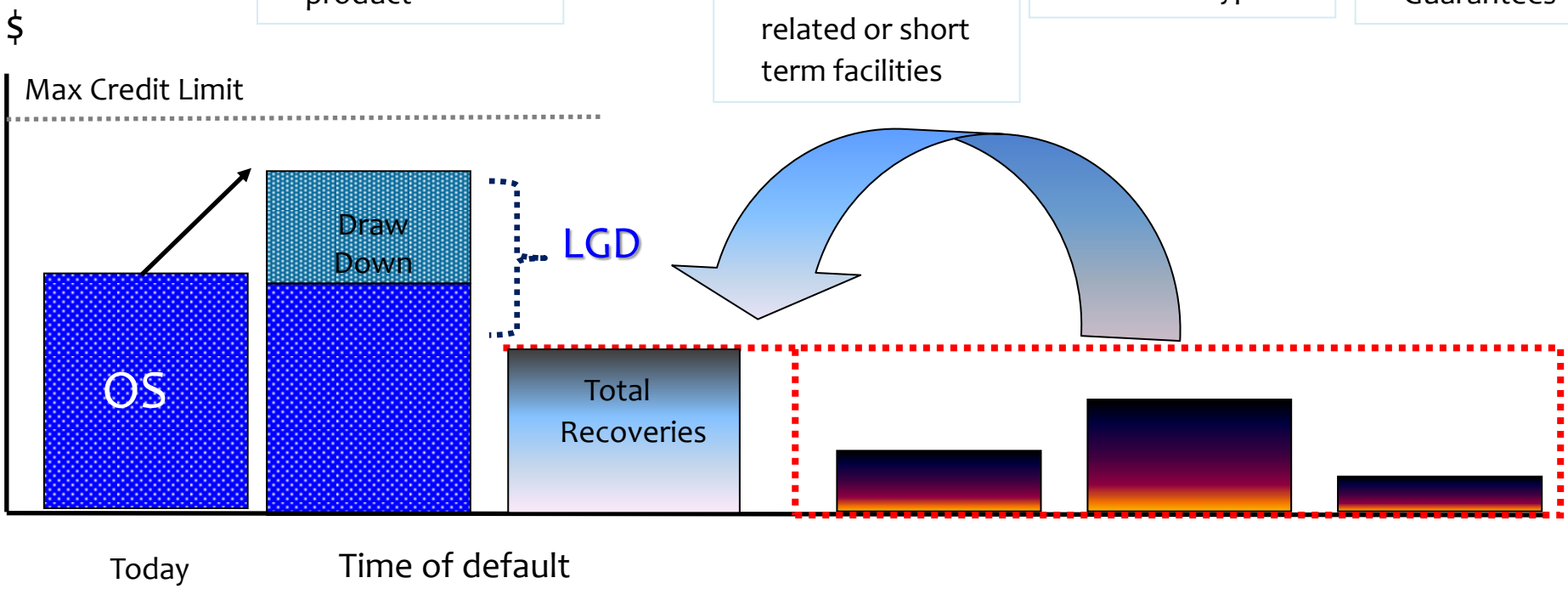
Exposure at Default (EAD) & Loss Given Default (LGD) Estimation

EAD
- CCF
- Differentiated by product

Product Recoveries
- Typically relevant for certain trade-related or short term facilities

Collateral Recoveries
- Differential by collateral type

Unsecured Recoveries
- Unsecured LGD
- Guarantees



Basel II Implementation in Malaysia: An Overview

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Current Status of Basel II implementation

Credit Risk

- 10 banking institutions from six banking groups have been allowed to adopt the IRB approach under Basel 2 from January 2010
- The remaining banking institutions migrated to Basel II Standardised Approach from Basel I from January 2008

10 IRB banks

Locally Incorporated Foreign Bank (LIFB)	1. UOB Bank, 2. OCBC Bank, 3. OCBC Al-amin, 4. Standard Chartered Bank (SCB) and, 5. SCB Saadiq
Domestic bank	1. Cimb Bank, 2. Cimb Islamic, 3. Maybank, 4. Maybank Islamic and, 5. RHB Bank

IRB Implementation Challenges : Qualitative Review

- Corporate Governance
  - Lack of independence of validation team
  - No formal terms of reference for validation team and modelling team
  - IRB and governance framework not yet approved by Board

- Rating System Operations
  - Inaccurate use of rating models (e.g. Corporate rating models used on SME borrowers)
  - Some accounts were not rated
  - High levels of over-rides
  - Annual review not done for certain accounts
  - Incorrect asset classification
  - Non compliance with policy on rating upgrades
  - Outdated value of collateral used
  - Non monitoring of external ratings

IRB Implementation Challenges : Qualitative Review (con't)

- Use of rating Internal Credit Risk Rating
  - Inaccurate information of borrowers keyed into credit rating system
  - Setting of 'Portfolio limits' based on risk rating not adhered
  - Limited use of credit scoring to facilitate credit decisions

- Data Management and IT infrastructure
  - Absence of tacking mechanism on data clean up
  - Incomplete IT architecture
  - Absence of data quality policy (e.g. ownership of data)
  - Incorrect mapping form source system to data warehouse

- Others
  - Models used before independent validation

IRB Implementation Challenges : Quantitative Review

- Modelling issues
  - Limited default data for certain portfolios
  - No assessment on representativeness of historical data
  - Robustness of calibration to derive risk components

- Data quality
  - No dual check during data collection
  - Manual extraction/ handling vs automated ETL

- Poor discipline in rating reviews
  - Inadequate controls/ penalties/ incentives to address overdue reviews
  - No mechanism to incorporate latest info or trigger rating review

IRB Implementation Challenges : Quantitative Review (con't)

- Validation
  - No overall framework
  - No tolerance level or internal benchmark specified
  - Low discriminatory power of rating
  - Independence
  - Out-of-sample validation not done
- Not meeting the use test requirement
- System complexity
  - Integration
- Documentation
  - Justification for factor selection not well-documented
  - Unclear treatment for missing values or outliers
  - Financial statement data not adequately stored for future remodelling

Basel III Implementation in Malaysia: An Overview

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Basel III Implementation in Malaysia– An Overview

- In December 2010, the Basel Committee on Banking Supervision (Basel Committee) finalized a package of measure to strengthen global capital and liquidity rules with the goal of strengthening the resilience of the global banking system.

- Bank Negara Malaysia supports the implementation of these reform measures and targets to implement the reform package in Malaysia in accordance to the globally-agreed levels and implementation timeline which provides for a gradual phase-in of the standards beginning 2013 until 2019.

Basel III Implementation in Malaysia– An Overview

The Reform Package

1. Enhancing the definition of capital
   - provides greater focus on common equity, also strengthening the eligibility criteria for other capital instruments

2. Raising the minimum capital requirements and introducing capital buffers
   - Minimum capital requirements will be raised in line with the levels determined under Basel III.
   - Fis will also be required to hold capital conservation buffer comprising common equity of 2.5% over-and-above the regulatory minimum.

	Common Equity Tier 1 Capital Ratio	Core Capital Ratio (CCR)[5]	Risk-Weighted Capital Ratio (RWCR)[6]
Basel III			
Minimum	4.5%	6%	8%
Conservation buffer	*+2.5%*		
Minimum plus conservation buffer	7%	8.5%	10.5%
Basel II			
Minimum	2%	4%	8%

Basel III Implementation in Malaysia– An Overview

The Reform Package

3. Implementation of the Leverage ratio
   - The Basel has targeted that banks publicly disclose LR positions beginning 2015, with the 3% target level becoming a fully binding minimum beginning 2018

4. Implementation of the Liquidity Coverage Ratio & Net Stable Funding Ratio
5. Additional loss-absorbency requirements for systemically important FIs

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Leverage Ratio		Observation period reporting						Standard in force	
Minimum common equity capital ratio[13]			3.5%	4%	4.5%	4.5%	4.5%	4.5%	4.5%
Capital conservation buffer						0.625%	1.25%	1.875%	2.5%
Minimum common equity plus conservation buffer			3.5%	4%	4.5%	5.125%	5.75%	6.375%	7%
Minimum tier 1 capital			4.5%	5.5%	6%	6%	6%	6%	6%
Minimum tier 1 capital plus conservation buffer			4.5%	5.5%	6%	6.625%	7.25%	7.875%	8.5%
Minimum total capital			8%	8%	8%	8%	8%	8%	8%
Minimum total capital plus conservation buffer			8%	8%	8%	8.625%	9.25%	9.875%	10.5%
Capital instruments that no longer qualify as non-core tier 1 or tier 2 capital			Phased out over a 10 year horizon beginning 2013						
Liquidity Coverage Ratio		Observation period reporting			Standard in force				
Net Stable Funding Ratio		Observation period reporting						Standard in force	

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Q & A

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