

# **The new bank provisioning standards: Implementation challenges and financial stability implications.**

Expected credit loss approach – Modeling  
challenges

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- **Provisioning models vs. Capital models**
  - Expected Loss: conditional EL vs. unconditional EL
  - Expected Loss time horizon
  - Definition of default
- **Some thoughts about capital cyclicity**
- **What does Unexpected Loss mean?**
- **Modelling and management challenges**

# Provisioning models vs. Capital models

## Expected loss: conditional vs. unconditional:

Provisioning (IFRS9) models are based on conditional expected losses (for both PD's and LGD's) however capital models are based on a mixture of unconditional expected PD's (TTC) and stressed LGD's (unconditional stressed expected loss).

## Additional differences with time horizons:

Capital models based on:

- Non defaulted assets: “one year expected losses using TTC PD's but Downturn LGD's”
- Defaulted assets: “life time expected loss BE (best estimate) plus additional unexpected losses (PD=100%)”

Provisioning models based on:

- Stage 1: “one year expected losses, using conditional PD's and LGD's ”
- Stage 2: “life time expected losses, using conditional PD's and LGD's “
- Stage 3: “life time expected loss using conditional LGD's (PD=100%)”

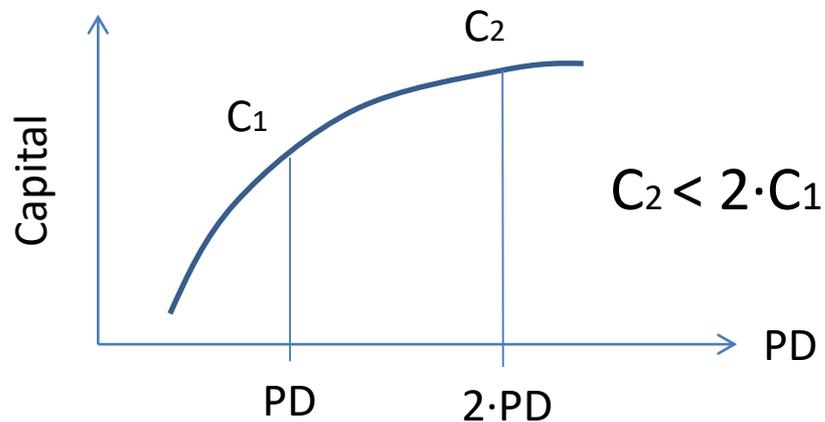
NOTE: discussion will be mostly based on PD and LGD, however same issues apply to EAD (credit conversion factor)

## Summary: Capital EL and provisions ECL puzzle

		Stage1	Stage 2	Stage 3
		Non Defaulted		Defaulted
Provisions	Time horizon	One year	Life time	Life time
	PD's	conditonal	conditional	100%
	LGD's	conditional	conditional	Conditional
EL Capital	Time horizon	One year	One year	Life time
	PD's	TTC	TTC	100%
	LGD's	DownTurn	DownTurn	Best Estimated +Unexpected

# Definition of default

- Definition of default (DoD) for capital purposes is established by the supervisor/regulator
- Stage 3 based on impairment and aligned with the internal credit risk management.
- Both definitions are not equal.
- It is interesting to note that a more conservative definition of default does not mean higher capital requirements. A more conservative DoD means PD higher but LGD lower, and given the concavity on PD of the capital function the capital requirement would decrease (assuming credit loss is constant).

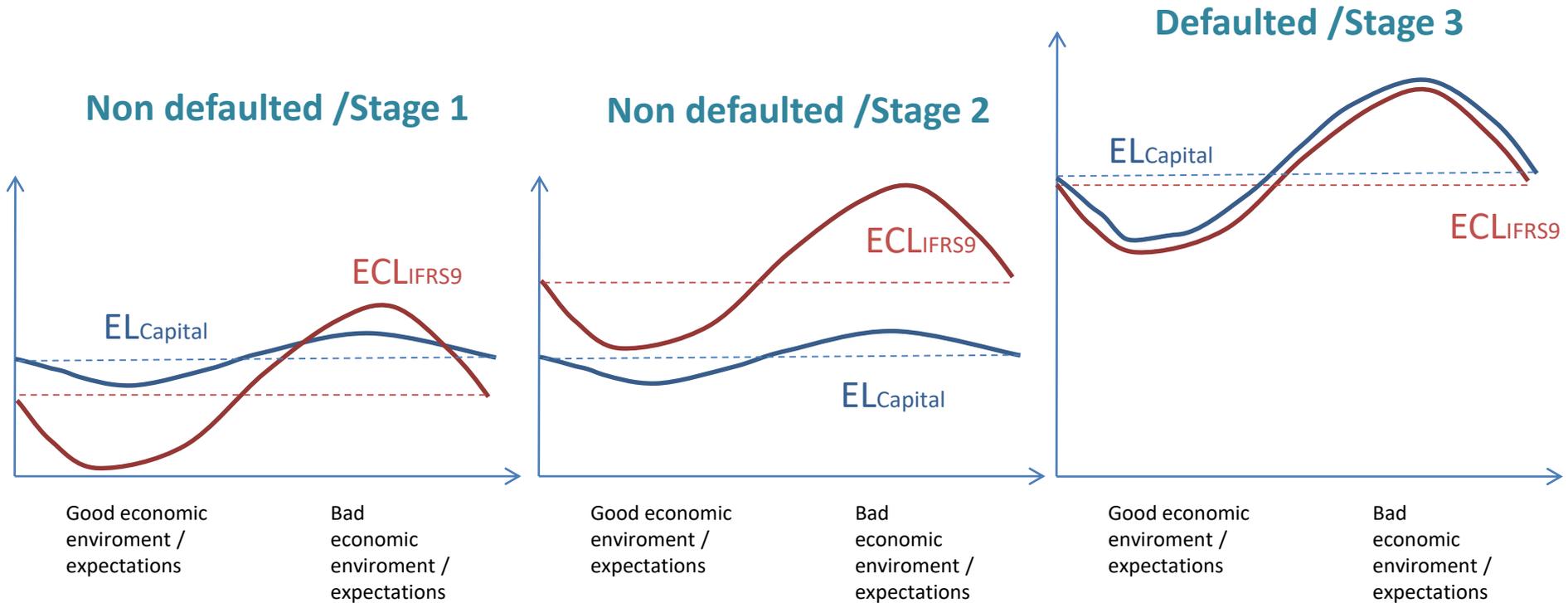


# Some thoughts about capital cyclicality

Is IFRS9 increasing capital cyclicality?

- Real credit losses are cyclical.
- Real Credit losses do not depend on accounting rules nor on capital rules.
- Provisions try to estimate ex-ante which will be the real level of credit losses.
- In some cases IFRS9 will anticipate future credit losses (Stage 2)
  
- Asymmetries between IFRS9 and capital rules could affect both, average capital ratio level and capital adequacy volatility. Some examples:
  - Effect of asymmetries: ECL higher than EL does not decrease (CET1) capital requirement however ECL lower than EL does increase (CET1) capital requirement. TTC capital ratio will decrease.
  - Anticipation effect: IFRS9 provisions are based on conditional estimations, a future expected change in macroeconomic scenarios will affect now provisions and consequently capital ratios, positively or negatively.

# EL & ECL “through the cycle”



The difference between  $EL_{capital}$  and  $ECL_{IFRS9}$ :

When  $EL_{capital} > ECL_{IFRS9}$ : CET1 must be adjusted

When  $EL_{capital} < ECL_{IFRS9}$ : CET1 is not adjusted

# What does Unexpected Loss mean?

Basel Committee on Banking Supervision :“An Explanatory Note on the Basel II IRB Risk Weight Functions”, July 2005

## 4.4. Expected versus Unexpected Losses

As explained above, banks are expected in general to cover their Expected Losses on an ongoing basis, e.g. by provisions and write-offs, because it represents another cost component of the lending business. The Unexpected Loss, on the contrary, relates to potentially large losses that occur rather seldomly. According to this concept, capital would only be needed for absorbing Unexpected Losses.

In the end, it was decided to follow the UL concept and to require banks to hold capital against UL only. However, in order to preserve a prudent level of overall funds, banks have to demonstrate that they build adequate provisions against EL. In above Figure 2, the risk weights now relate to the distance between the VaR and the EL only.

## Capital = Loss surprise

Conditional PD (conditional on a single factor with probability of 0,1%)

$$\text{Capital requirement (K)} = \underbrace{[\text{LGD} * \text{N} [(1 - \text{R})^{-0.5} * \text{G}(\text{PD}) + (\text{R} / (1 - \text{R}))^{0.5} * \text{G}(0.999)] - \text{PD} * \text{LGD}] * (1 - 1.5 * \text{b}(\text{PD}))^{-1} * (1 + (\text{M} - 2.5) * \text{b}(\text{PD}))}_{\text{EL of a loan (expressed as percentage figure of EAD)}}$$

EL of a loan (expressed as percentage figure of EAD)

Unconditional PD

Unexpected loss is the difference between the real loss and the expected loss (loss surprise)

What does “expected loss” mean? Two views:

- Capital EL: Ad-hoc approach, combines Unconditional PD (TTC) with DT LGD
- IFRS9 ECL: Conditional Expected loss (with different time horizons)

If provisions are based on “conditional expected losses” makes little sense to estimate unexpected losses comparing the percentile with an EL based on a mixture of unconditional PD’s and DT LGD’s...

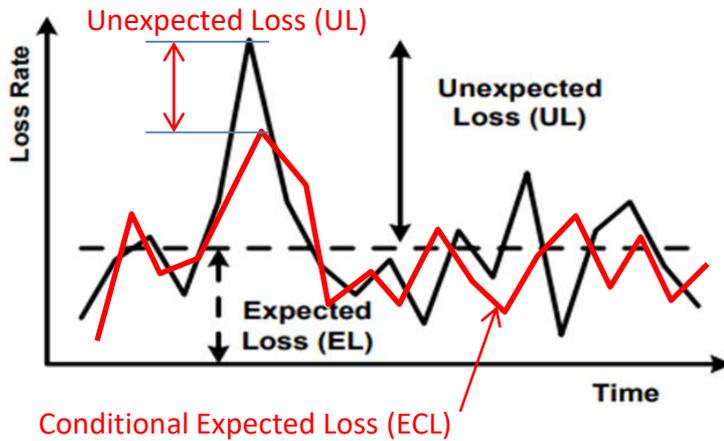
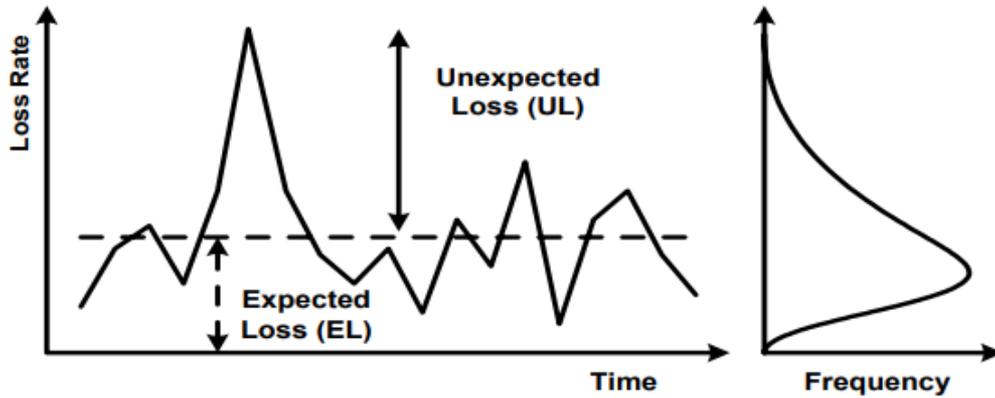
Thought 1

In the limit, If IFRS9 ECL would be a perfect predictor of credit losses, Banks would not need capital to cover unexpected credit losses. Credit losses would be perfectly covered by the amount of provisions. Credit losses are no longer random!!!!!!

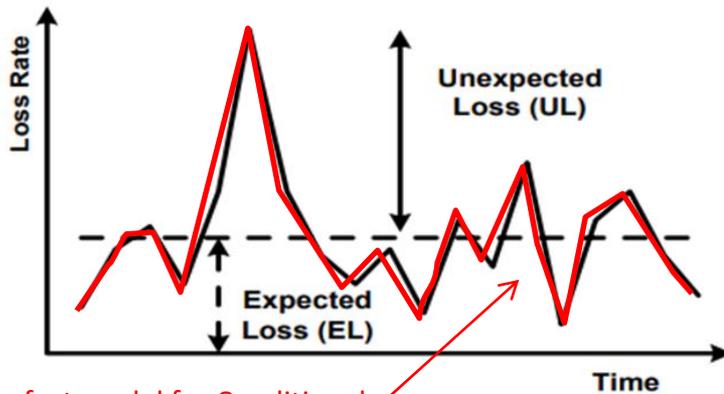
Thought 2:

Should Credit Capital requirement depend on the uncertainty of the IFRS9 ECL estimations?  
Should the capital formula be adjusted in order to align it with IFRS9 provisions?

Basel Committee on Banking Supervision :“An Explanatory Note on the Basel II IRB Risk Weight Functions”, July 2005. Page 2



Conditional Expected Loss (ECL)



Perfect model for Conditional Expected Loss (ECL)

With this model there is no unexpected Loss (UL)!!!!!!

If conditional expected loss is a better estimator than unconditional expected loss, unexpected loss should be lower and capital requirement should decrease.

IFRS9, based on conditional expected losses, should affect the capital calculation formula!!!!!

# Modelling and management challenges

Lack of historical data and biased historical data:

- In order to estimate PD's all loans have been approved by the Entity's risk policies
- In order to estimate LGD's all loans have passed the Entity's workout process
- Risk policies are not static, evolve in time, introducing additional bias.
- Also regulation evolves, affecting risk parameters (for example bankruptcy laws, definition of default..)
- In summary: We are applying now risk parameters (PD's, LGD's, CCF's) based on historical information obtained from changing portfolios, policies, practices, rules, laws...

Backtesting: Previous issues difficult backtesting. Additionally historical data is affected by economic cycles making backtesting even more difficult.

# Modelling and management challenges

Models can/should also be used for management purposes .(Some) main management purposes:

- Loan approval
- Loan pricing
- Workout strategies
- Capital planning
- Stress test...

However, capital models and provision models are different... Which one should we use?

On the other hand, capital models are subject to a very detailed set of conditions, including conservative adjustments but, at the same time, IFRS9 should not be affected by those conservative adjustments. Should we use those “conservative” parameters defined by the supervisor for management? How?

Finally, management practices can evolve very quickly (for example new scoring models) but capital models need the supervisor prior approval. Can management models and supervisory models be different? How to align both worlds?