



# *IFRS 9 Financial instruments – using models in impairment calculations, avoiding the black box effect - 29th October 2018*

PHILIPPA KELLY

SHUVO BANERJEE

CHIN HSIAO

ALEX LABRAM

# Your presenters from Grant Thornton



**Shuvo Banerjee**

**IFRS 9 Assurance Lead**

**E:** [shuvo.banerjee@uk.gt.com](mailto:shuvo.banerjee@uk.gt.com)

**T:** [+44 \(0\)20 7865 2096](tel:+44202078652096)

- Shuvo is a UK Chartered Accountant with over 20 years' experience in Retail Banking and Insurance. He leads Financial Reporting assurance work, including IFRS 9, at Grant Thornton, helping organisations implement end-to-end controls, assist in model validation and enabling Risk and Finance functions to develop common systems and processes for reporting and risk management purposes.
- Shuvo has led IFRS 9 Assurance reviews across a wide variety of clients ranging from Global Systemically Important Banks, subsidiaries of large international banks and challenger banks.
- Prior to joining Grant Thornton, Shuvo headed the Finance Internal Audit team at RBS responsible for providing assurance on all aspects of Financial reporting including Pillar 3 disclosures and the RWA process. His role included assessing the end-to-end IFRS 9 control framework on request from the Group Audit Committee.
- Following his recommendations Shuvo was on full-time secondment to the RBS IFRS 9 programme helping to implement a Sarbanes-Oxley compliant end-to-end control framework across the Credit Risk team, Model Risk team, IT, Economics team and Finance. He joined Grant Thornton in April 2018 to share first hand experience both in terms of assurance support and implementation needs of IFRS 9.



**Chin Hsiao**

**Senior Risk Modelling SME**

**E:** [Chin-Lung.Hsiao@uk.gt.com](mailto:Chin-Lung.Hsiao@uk.gt.com)

**T:** [+44 \(7789\) 175 678](tel:+447789175678)

- Chin has over 12 years extensive risk quantitative modelling experiences within financial services across model development, model implementation, model validation, governance and framework, internal audit and quality assurance service lines.
- Chin specialised in the area of Retail / Wholesale sector modelling including IFRS9, AIRB, Stress Test, Model Risk.
- He has gained experience as a senior model validator where conducted independent model validation for the newly developed IFRS9 models and ensured the Bank were compliant with IFRS9 standards. As part of his role he reviewed and challenged the technical and conceptual soundness of the IFRS9 models. The reviewed IFRS9 models include PD / LGD / EAD / Stage Allocation / Expected Credit Loss models.
- Chin's most recent project was acted as assurance workstream lead for the largest Irish bank for their 2018 EBA stress test project where EBA required the stress test to use IFRS9 output as foundation of stress test.
- Chin has worked closely with Shuvo providing modelling expertise on the various IFRS 9 assurance reviews at Grant Thornton.
- Chin's has also assisted various projects including IRB model development and validation, CCAR/ECB/BOE stress test wholesale and retail model review and validation, ICAAP, LIBOR, Stress VaR, RWA and Capital models.



**Alex Labram**

**Manager – Modelling team**

**E:** [alexander.jm.labram@uk.gt.com](mailto:alexander.jm.labram@uk.gt.com)

**T:** [+44 \(0\)20 7184 4734](tel:+44202071844734)

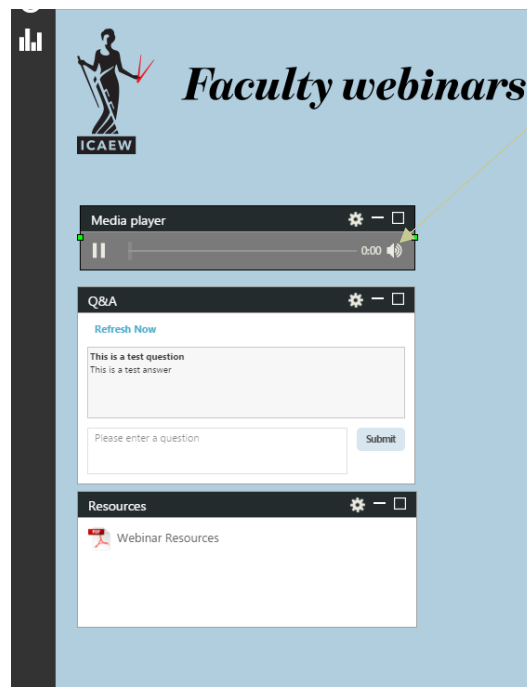
Alex is a part qualified actuary with over 10 years' experience in the finance industry. His consulting background has given him exposure to the full breadth of financial services, including credit institutions, money services, wealth management and mutuals. He specialises in modelling and information systems, bridging the gaps between mathematical precision, software development best practice, and management comprehension.

Most recently, Alex performed an end-to-end and top-to-bottom validation of a commercial bank's IFRS 9 Impairments model, including their PD models and in-house economic scenario generator. He supported the client in identifying new approaches for noncompliant areas, proposed new end-to-end tests to confirm the model's overall validity, and provided insight on model development and implementation best practices.

Alex has previously worked on:

- Sector-based VaR models for a export credit agency
- Credit spread models for a general insurer's Solvency II internal model
- CVA/DVA models for a corporate foreign exchange provider
- ICAAP stress testing models for a commercial bank

# *Introduction*



Audio problems?

- ensure your volume is turned on
- if you experience poor sound quality you may benefit from refreshing your page

# ICAEW

Webinar on IFRS 9 IFRS 9 Financial  
instruments – using models in impairment  
calculations, avoiding the black box effect

29<sup>th</sup> October 2018



**“Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning”.**

**Winston Churchill**



# Contents



1. Overview including Stage Allocation and definition of default
2. End-to-End control framework (including models)
3. Modelling (“The Black Box”) - basics
  1. Probability of Default (PD)
  2. Loss Given Default (LGD)
  3. Exposure at Default (EAD)

# IFRS 9 Overview

- IFRS 9 is applied for annual periods beginning on or after 1 January 2018.
- Applied retrospectively - no need to restate prior periods
- IFRS 9 can be segmented into three key areas:

## Part 1 Classification and measurement



- Three classifications of financial assets based on business model and contractual cash flow characteristics

## Part 2 Expected Credit Losses (ECL)



- Concept of ECL measured as either:
  - 12 month ECL
  - Lifetime ECL

## Part 3 Hedge accounting



- Hedge accounting is aligned more closely with risk management
- New qualifying hedge items and hedging instruments

# Staging and definition of default



# General approach - three stages for asset performance



Stage 1 – Initial recognition  
(performing)  
12 month expected credit losses

- Covers instruments that **have not deteriorated significantly** in credit quality since initial recognition
- Effective interest rate is applied to the **gross** carrying amount



Stage 2 – Significant increase in credit  
risk (under-performing)  
Lifetime expected credit losses

- Covers financial instruments that have **deteriorated significantly** in credit quality since initial recognition
- Effective interest rate is applied to the **gross** carrying amount



Stage 3 – Impairment  
(non-performing)  
Lifetime expected credit losses

- Covers financial assets that have objective evidence of **impairment** at the reporting date
- Effective interest rate is applied to the **net** carrying amount

# Stage Allocation

**Two types of criteria** are used in Stage allocation.

## **Quantitative** Criteria:

1. PD (Probability of Default) comparison – i.e. the reporting date PD is significant higher than PD at origination
2. Credit Rating downgrade – i.e. by a given number of notches
3. Days Past Due – e.g. after 30 days, move from Stage 1 to Stage 2; after 90 days, move from Stage 2 to Stage 3

## **Qualitative** Criteria:

1. Forbearance granted
2. Other high risk event – e.g. credit card limit usage reaches threshold set up by firms
3. One of the multiple facilities belong to a client defaults

# Objective evidence of increase in credit risk

**Banks need suitable Management Information to help them:**

Identify a significant increase in credit risk (move from Stage 1 to Stage 2):

<ul style="list-style-type: none"><li>• Internal indicators</li><li>• Internal credit rating</li><li>• Collateral, quality of a guarantee</li></ul>	<ul style="list-style-type: none"><li>• Entity's expected performance</li><li>• Expected changes to loan documentation</li><li>• Borrower's operating results</li></ul>	<ul style="list-style-type: none"><li>• External market indicators of price risk</li><li>• External credit rating</li><li>• Change in environment e.g BREXIT !!</li></ul>
-----------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Rebuttable presumptions:**

'30 days past due'

Track objective evidence of impairment (move from Stage 2 to Stage 3):

<ul style="list-style-type: none"><li>• Breach of contract</li><li>• Significant financial difficulty of the borrower</li></ul>	<ul style="list-style-type: none"><li>• Disappearance of an active market for that financial asset</li><li>• Lender grant a concession relating to borrower's financial difficulty</li></ul>	<ul style="list-style-type: none"><li>• Probable bankruptcy or other financial reorganisation</li><li>• Purchase or origination of a financial asset at a deep discount that reflects the incurred credit losses</li></ul>
---------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Rebuttable presumptions:**

'90 days past due'

# PRA – UK IRB – Mortgages round table

## Definition of Default

### Overview of expectations

Definition component	Expectations
<b>Days past due</b>	<ul style="list-style-type: none"> <li>A back-stop of 90 or 180 days past due must be defined</li> <li>Consideration should be given to mortgage exposures reaching their maturity date and how the number of days past due is being calculated past maturity</li> </ul>
<b>Unlikelihood to pay indicators</b>	<ul style="list-style-type: none"> <li>Firms should undertake robust analysis to support the treatment of all potential Unlikelihood to Pay (UTP) criteria within the default definition. Examples include: <ul style="list-style-type: none"> <li>Bankruptcy</li> <li>Litigation / possession</li> <li>Forbearance</li> <li>Specific provision raised</li> </ul> </li> <li>Consideration should be given to the measurement of subsequent arrears emergence for all UTP events (e.g. is a forbearance delaying a default event or is it leading to a cure?)</li> <li>The firm should be able to demonstrate the models' accuracy on relevant UTP sub-segments (e.g. forbearance)</li> </ul>
<b>Cure definition (i.e. the criteria used to return defaulted mortgages to a performing status)</b>	<ul style="list-style-type: none"> <li>A cure definition must be defined and its incorporation in final model estimates should be done on a cautious basis</li> <li>Firms should undertake robust analysis to support their definition of cure</li> <li>Consideration should be given to the measurement of cures against subsequent arrears emergence</li> <li>Consideration should be given to the impact of long cure periods on key model parameters (example: possession rates and unresolved accounts)</li> </ul>
<b>Consistency across PD and LGD</b>	<ul style="list-style-type: none"> <li>The definition of default must be consistent across PD, LGD and EAD model parameters</li> <li>Consideration should be given to cure periods and the alignment with the 12 month performance window used to model PD estimates</li> </ul>
<b>Documentation</b>	<ul style="list-style-type: none"> <li>Firms should have a clear and documented policy describing their default definition and in which circumstances an exposure that has been in default should subsequently be returned to performing status</li> </ul>



BANK OF ENGLAND  
PRUDENTIAL REGULATION  
AUTHORITY

# End-to-end control framework

# Regulatory guidance



**EBA guidance ‘Guidelines on credit institutions’ credit risk management practices and accounting for Expected credit losses’ (May 2017)** provides clear expectations on establishing a framework to measure expected credit losses for IFRS 9.

**Basel Committee for Banking Supervision 239 (BCBS 239)** ‘Principles for effective risk data aggregation and risk reporting’, January 2013 - BCBS 239 aims to address data governance at both entity and group level. While it initially targeted systemically important banks, it has had a proportionate roll out to a wider range of banks depending on the size, nature and complexity of business activities. Targeting risk data aggregation, it is important to model risk as it ensures the necessary data is available from across all areas of the business.

**Prudential Regulatory Authority (UK)** – ‘Model Risk Management principles for Stress Testing’ (April 2018). Compliance with the guidance is checked through the Bank of England’s annual concurrent stress tests and the Supervisory Review and Evaluation Process (SREP). Firms must review their model risk management processes against CRD IV/CRR and proposed changes under CRD V/CRR II.

They have also recently released a paper on the Bank of England’s policy on valuation capability to support resolvability.

# EBA – Guidelines – key points

## Para 27 – USE OF REASONABLE & SUPPORTABLE INFORMATION (without undue cost or effort)

An effective process to ensure that all relevant and reasonable and supportable information, including forward-looking information, is appropriately considered in assessing credit risk and measuring ECL

## Para 27 – ROLES AND RESPONSIBILITIES

Identification and descriptions of the roles and responsibilities of staff involved

## MODELS

- Para 27 - An effective model validation **process** to ensure that the credit risk assessment and measurement models are able to generate accurate, consistent and unbiased predictive estimates, on an ongoing basis. This includes establishing **policies** and procedures which set out the accountability and reporting structure of the model validation process, internal rules for assessing and approving **changes to the models**, and reporting of the outcome of the **model validation**;
- PARA 66 - **Model validation** should be conducted when the ECL models are initially developed and when significant changes are made to the models, and should ensure that the models are suitable for their proposed usage on an ongoing basis. BASEL also says “**A bank should regularly (for example, annually) review its ECL models.**”
- PARA 67 **A review of the model validation process by independent parties (e.g. internal or external parties)** to evaluate the overall effectiveness of the model validation process and the independence of the model validation process from the development process. The findings of the review should be reported in a prompt and timely manner to the appropriate level of authority (e.g. senior management, audit committee).

## PARA 27 – INTERNAL AUDIT

- i. independently evaluates the effectiveness of the credit institution’s credit risk assessment and measurement systems and processes, including the credit risk rating system; and
- ii. makes recommendations on addressing any weaknesses identified during this evaluation.



# PRA (UK) – ‘Model Risk Management principles for Stress Testing’ (April 2018)

**Principle 1** – Banks have an established **definition of a model** and maintain a **model inventory**

**Principle 2** – Banks have implemented an **effective governance framework, policies, procedures and controls to manage their model risk**

**Principle 3** – Banks have implemented a robust **model development and implementation process**, and ensure **appropriate use of models**

**Principle 4** – Banks undertake **appropriate model validation and independent review** activities to **ensure sound model performance** and **greater understanding of model uncertainties**.

**The principles are intended to be relevant to all model types, not only those used in a stress-testing context.** In future, the PRA will consider whether it should further extend the principles to be applied to other types of models.





# The devil is in the detail

## Model risk management principles for stress testing – PRA publication – April 2018:

P2.2 The **Board of Directors and Senior Management** are expected to provide challenge to model outputs and understand model capabilities, the model limitations, and the potential impact of model uncertainty for the most material models and the aggregate outputs

*Footnote— When assigning the responsibilities of the management of model risk to senior management functions, firms should consider the relevant prescribed responsibilities in “Allocation of responsibilities” 4.1 or 5.2 in the PRA Rulebook*

P1.2 **Model Inventory** – should also include all model uses and direct or material dependencies i.e. models that depend or use the output of other models

P3.1 **Model purpose and design** – model results should be supported by a comparison with alternative theories / approaches or assessing sensitivities of changes in model inputs

P3.5 **Use of judgement** – model overlays used to modify the parameters / inputs and or outputs due to known model limitations should be appropriately documented and subject to review and challenge

P4.2 **Independence** – People performing model reviews should be independent of the model development process

# The end-to-end control framework

## Process steps

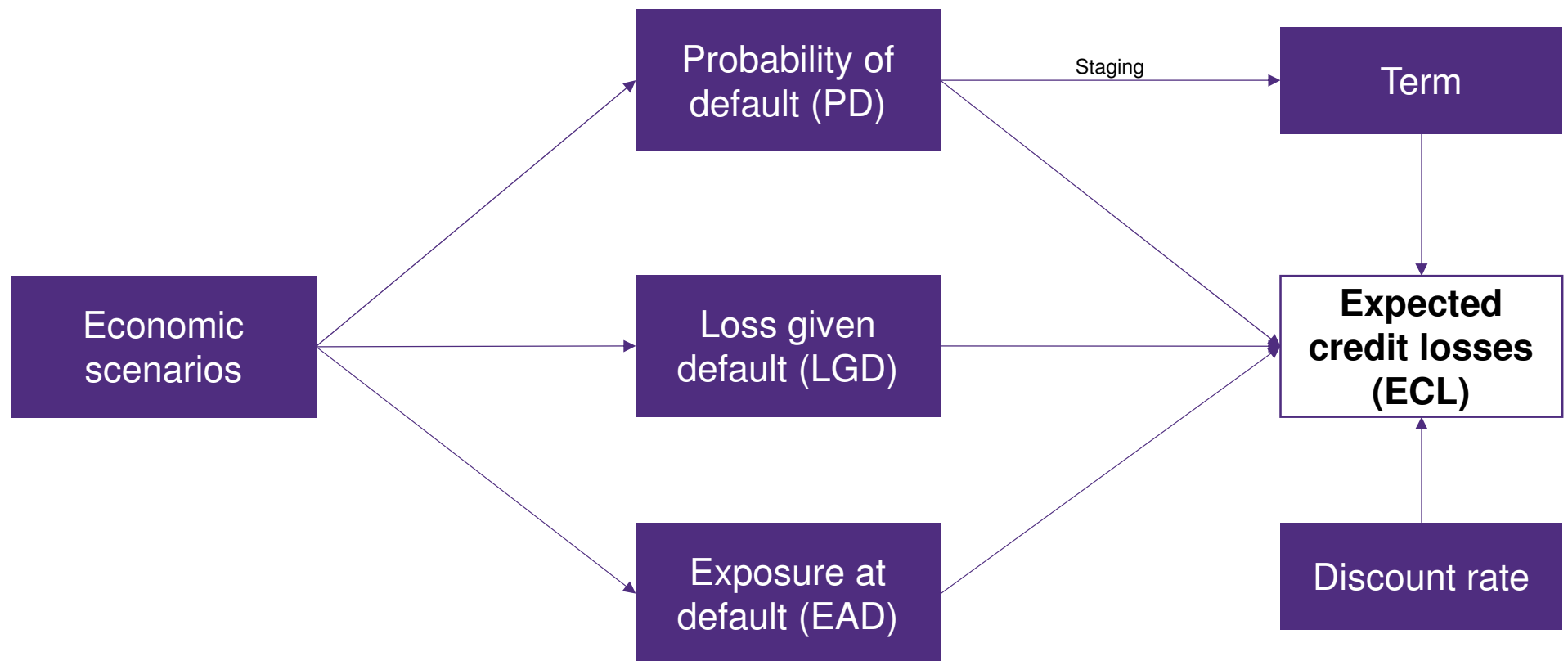
<b>Classification and Measurement of new products</b>	<ul style="list-style-type: none"> <li>Business model – confirm periodically if reclassification is required</li> <li>New product approval process – perform the SPPI test</li> </ul>
<b>Macroeconomic scenarios</b>	<ul style="list-style-type: none"> <li>Appropriate choice of relevant factors</li> <li>Approval of relevant weights to each scenario</li> <li>Consistency of base case with ICAAP</li> </ul>
<b>Data</b>	<ul style="list-style-type: none"> <li>Appropriate data sources (internal and external)</li> <li>Data warehousing and integrity controls</li> <li>Policies, procedures and disclosures including data ownership</li> <li>Data quality, methodologies and modelling</li> </ul>
<b>Models</b>	<ul style="list-style-type: none"> <li>Suitability/proportionality</li> <li>Model governance controls</li> <li>Model monitoring – fit for purpose</li> <li>Independent model validation</li> <li>Model limitations made transparent</li> </ul>
<b>Model output review including sensitivity analysis</b>	<ul style="list-style-type: none"> <li>Extent of judgement overlay versus modelling – post model adjustments</li> <li>Extent of non-modelled analysis</li> <li>Sensitivity analysis on changes to risk factors</li> </ul>

## Governance

<b>Senior management and Board oversight</b>	<ul style="list-style-type: none"> <li>Approval of the Significant Increase in Credit Risk policy</li> <li>Monitoring changes in credit risk – use of early warning indicators</li> <li>Assessing staging outputs</li> </ul>
<b>Financial reporting</b>	<ul style="list-style-type: none"> <li>Information disclosed is consistent with Pillar 3</li> <li>Disclosures can be reconciled to underlying source data</li> <li>Detailed disclosures are consistent with credit risk management practices and models used</li> </ul>
<b>Procedures</b>	<ul style="list-style-type: none"> <li>End to End systems and controls documented</li> <li>Roles and responsibilities articulated and agreed</li> <li>Workflow documented and evidenced in each reporting cycle</li> </ul>
<b>IT systems</b>	<ul style="list-style-type: none"> <li>Models are in systems that are supported by IT</li> <li>Appropriate IT general controls are in place</li> </ul>
<b>Links to pricing</b>	<ul style="list-style-type: none"> <li>Feedback loop created between impairment experience and pricing</li> </ul>

# The Black Box

# ECL model structure – the basics



# ECL calculations – the basics

The stage allocation defines the horizon over which predicted defaults will contribute to Expected Credit Losses.

The ECL calculation for each stage is shown below.

1) Stage 1:  $PD(12 \text{ month}) \times LGD \times EAD(12 \text{ month})$

1) Stage 2:  $PD(\text{lifetime}) \times LGD \times EAD(\text{life time})$

2) Stage 3:  $LG D * \text{Balance}$

Abbreviations: “PD” – Probability of Default; “LGD” – Loss Given Default; “EAD” – Exposure at Default

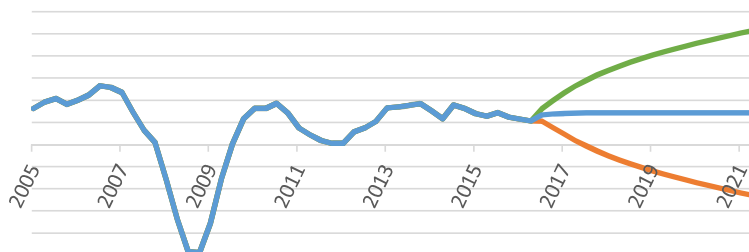
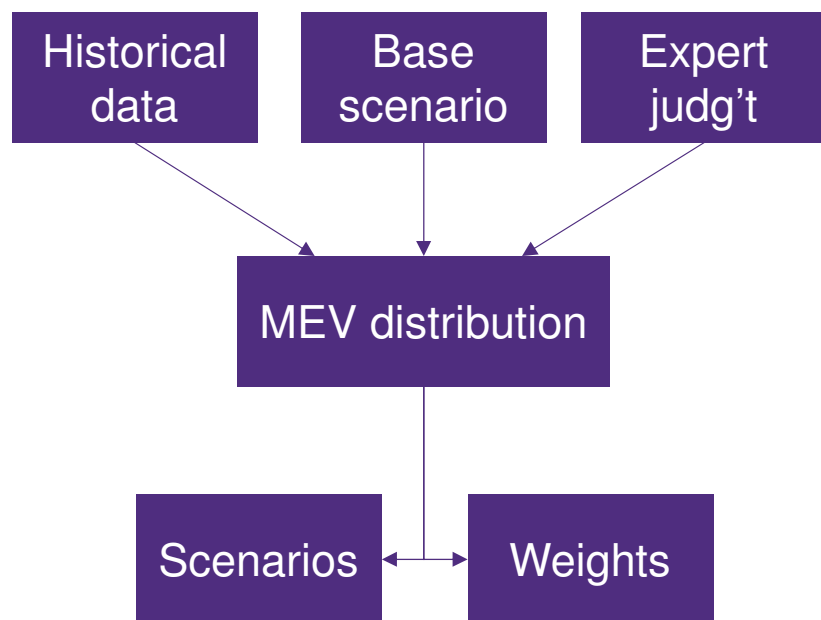
# Example: single facility, single scenario

## A simple Lifetime ECL calculation

Projection year		1	2	3	4
PD	<i>A</i>	0.5%	0.4%	0.3%	0.2%
LGD	<i>B</i>	40%	40%	40%	40%
EAD (£k)	<i>C</i>	3,000	2,500	1,800	1,000
Undiscounted LECL (£k)	<i>D = A x B x C</i>	6.0	4.0	2.2	0.8
Discount factor	<i>E</i>	0.95	0.90	0.85	0.80
Discounted LECL (£k)	<i>F = D x E</i>	5.7	3.6	1.8	0.6
<b>Total LECL (£k)</b>		<b>11.8</b>			

Source: Grant Thornton UK LLP

# Economic Scenario Generation



The base scenario can be taken from economic forecasts.

Macroeconomic variables

- Are typically modelled statistically, although simpler approaches may rely solely on expert judgement
- Must be unbiased and capture adverse correlations between MEVs
- Common econometric approaches have names like bootstrap, VAR/VECM, VARIMA, MGARCH
- Expert judgement is required to ensure that the distribution of MEVs reflects the range of possible real-world outcomes (e.g. Brexit!)

Scenarios and weights

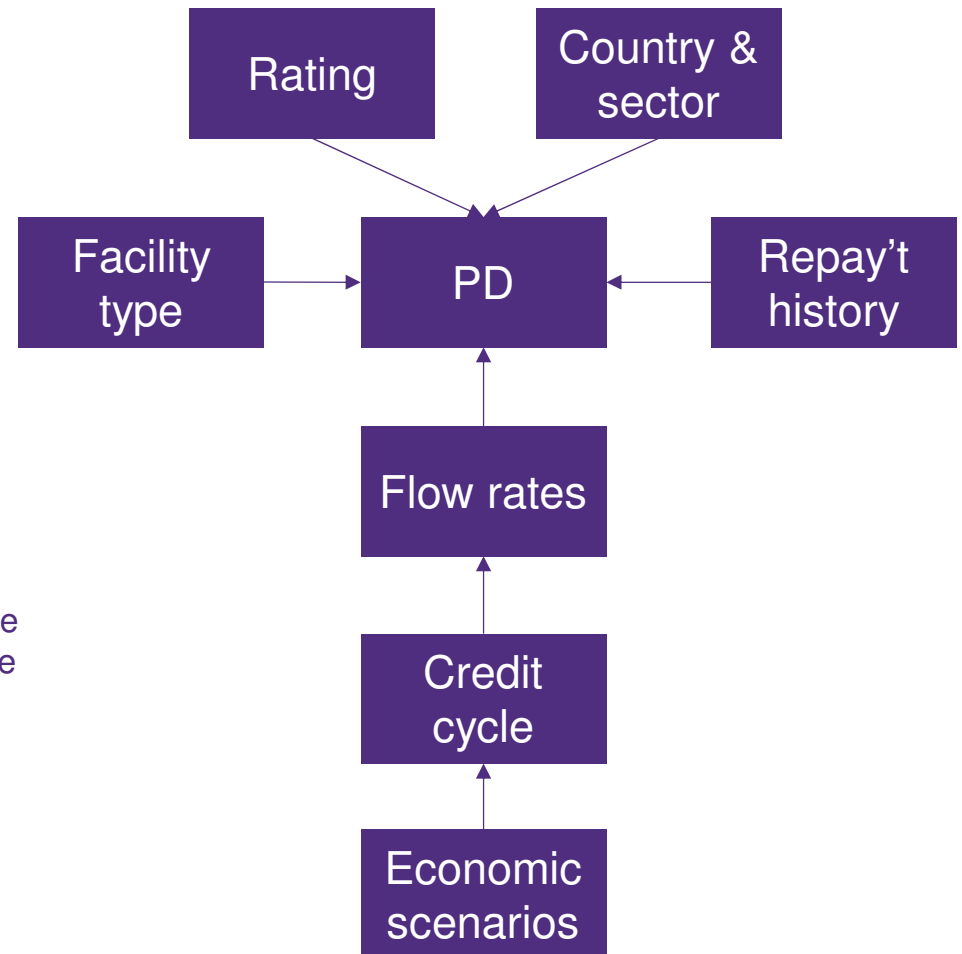
- Must provide a good approximation to the full distribution of MEVs
- A common approach is to use three scenarios: **upside, downside, base**
- Weights must be selected carefully – the weighting of a 10<sup>th</sup> percentile scenario will *not* be 10%!

# Probability of Default

Great diversity of modelling approaches depending on:

- Product type (retail vs commercial vs derivative)
- Size of portfolio
- Depth of customer information
- Availability of historic data
- Structure of credit ratings / grades / scores
- Flexibility of repayment (prepayment, forbearance)

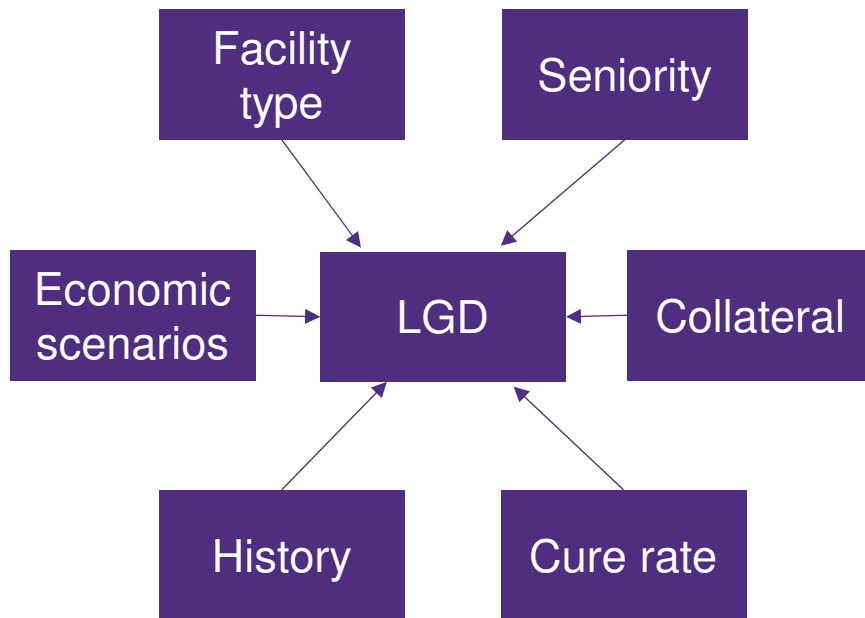
IFRS 9 requires collective provisions to include “*all relevant credit information, including forward-looking macroeconomic information*” (B.5.5.4). Some existing models, especially those used for VaR calculations, cannot be easily adapted to handle this requirement.



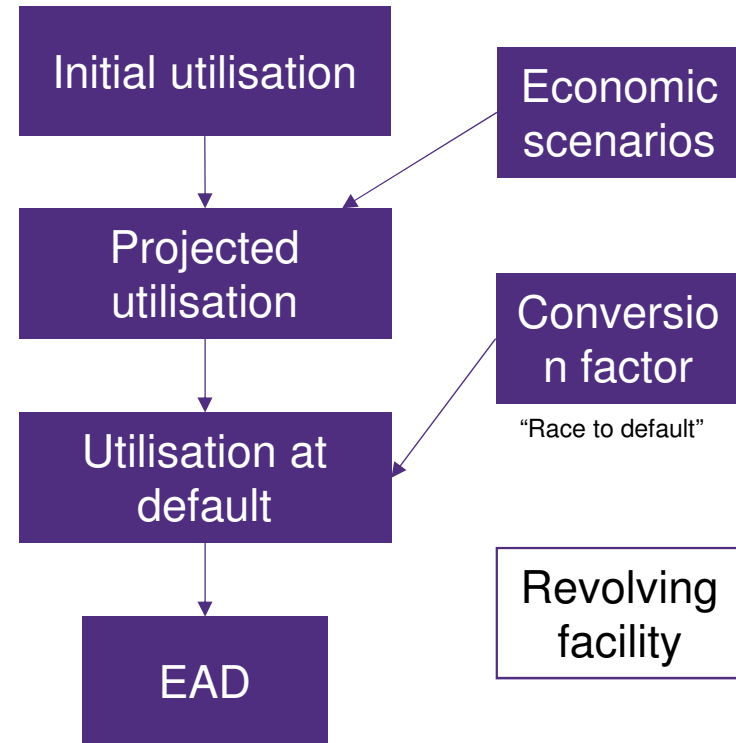


# Other Loss Components

## Loss Given Default



## Exposure At Default



# Probability of Default (PD)

## 12-Month PD

Flow Rate approach: By calculating the proportion of facilities that move to default from each Days Past Due (DPD) status.

		Period 2			
		Stage 1 DPD between 0 and 29	Stage 2 DPD between 30 to 89	Default DPD above and equal to 90	Total
Period 1	Stage 1 DPD between 0 and 29	63	20	2	85
	Stage 2 DPD between 30 to 89	10	45	40	95
	Default DPD above and equal to 90	1	5	1	7
	Total	74	70	6	187

The table above represents the number of facilities moving between stages in a single period:

- There are 2 facilities moving to default from Stage 1.
- There are 40 facilities moving to default from Stage 2.

The probability of default for Stage 1 is calculated as  $= 2 / 85 = 2.35\%$

The probability of default for Stage 2 is calculated as  $= 40 / 95 = 42.11\%$

By repeating the same process for different consecutive observation periods, the 12-month PD can be taken as the average PD from different consecutive periods.

Stage	Mar-15	Jun-15	Sep-15	Dec-15	Average
Stage 1	2.35%	2.75%	3.87%	2.94%	2.98%
Stage 2	42.11%	67.14%	50.23%	57.16%	54.16%

\*\*\* The figures above are for illustration purposes only.

12-MONTH PD

# Probability of Default (PD)

## 12-Month PD (continued)

Introducing a simplified approach:

- Map the internal rating to an external rating system and use the probability of default determined by the rating agency.

Category	S&P Rating Grade	S&P Rating PD	Average S&P PD	Internal Bank Grade
Investment Grade	AAA	0.01%	0.18%	Internal Grade 1
	AA+	0.03%		
	AA	0.05%		
	AA-	0.07%		
	A+	0.12%		
	A	0.16%		
	A-	0.20%		
	BBB+	0.25%		
	BBB	0.35%		
	BBB-	0.55%		
Non-Investment Grade	BB+	0.88%	1.13%	Internal Grade 2
	BB	1.38%	2.58%	Internal Grade 3
	BB-	2.06%		
	B+	3.10%	5.80%	Internal Grade 4
	B	4.64%		
	B-	6.96%	10.18%	Internal Grade 5
	CCC+	10.18%		
	CCC	17.50%	17.50%	Watch List
Default	CCC-	37.50%	37.50%	Significant Risk Watch List
	CC/D	100%	100%	Default

Bank ABC has mapped their internal grade 1 to 5 to S&P credit rating.

As bank ABC only provides lending to corporates which have credit ratings from S&P, the bank will be able to use the average S&P PD to estimate the 12-month PD for its customer.

At reporting date, the rating of a corporate customer will depend on S&P's rating.

Example:

- A corporation has a 60-month corporate loan from bank ABC. The S&P rating of the corporation is A+. Bank ABC initially assigns the loan to internal grade 1, with PD 0.18%.
- 12 months later, bank ABC reviews the rating of a corporation. At this point in time, the corporation's S&P rating has become B+. Bank ABC then reassigns the loan to internal grade 3, with PD 2.58%.
- The 12-month PD for this corporation at this point will be 2.58%.

\*\*\* The figures above are for illustration purposes only.

# Probability of Default (PD)

## Lifetime PD

Econometric Model Impact Estimation (Forward Looking)

12-Month PD



Lifetime PD

\*\*\* For example, if a loan will mature in 36 months, lifetime PD means the PD from month 13 to month 36.

### Econometrics Model Impact Estimation – how does it work?

Consider a simple econometric model:

	Change in unemployment rate	Interest Rate	House Price Index
Current Value	12%	3%	640
Coefficient	-3.3	1.5	0.043

- The above table illustrates:
  - The current interest rate is 3% and the econometrics model impact contribution from the interest rate is 1.5 times.
- So what is the econometrics model impact?
  - By multiplying the current values of macroeconomic variables by the coefficients, we calculate the econometrics model impact:

$$\text{Impact} = 12\% \times (-3.3) + 3\% \times 1.5 + 640 \times 0.043 = -7.58\%$$

### Determining Lifetime PD for month 24

$$\text{Lifetime PD at month 24} = 12\text{-month PD} \times (1 + \text{impact})$$

For the corporation in our previous example, the 12-month PD was 2.98%.

Therefore:

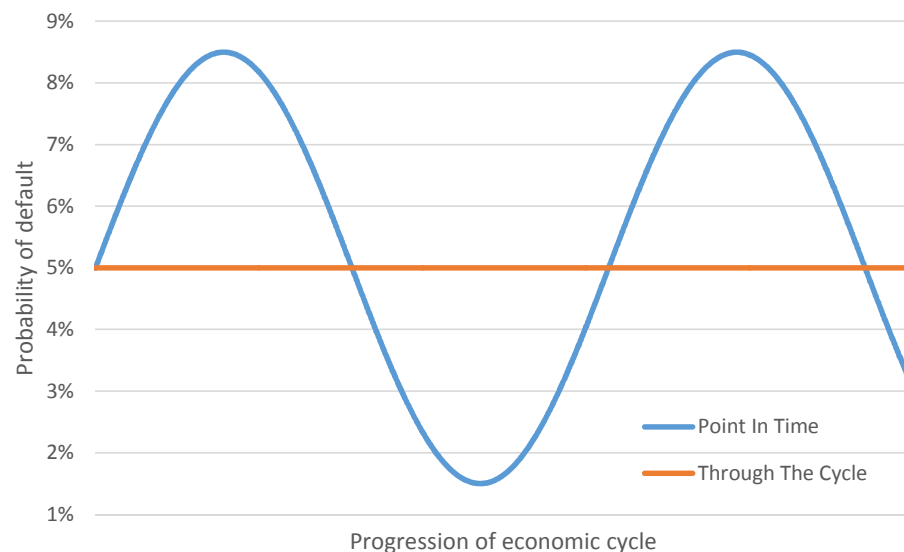
$$\text{Lifetime PD at month 24} = 2.98\% \times (1 - 7.58\%) = 2.75\%$$

# “Point in Time”?

Probabilities of default may be “point-in-time” (PIT) or “through-the-cycle” (TTC):

- A PIT PD assesses the borrower’s credit-riskiness given current economic circumstances. It will be very accurate over a short term (e.g. 1 year), but inaccurate over longer horizons (unless explicitly projected forwards).
- PIT PDs may be derived from PIT ratings (as used in many banks’ day-to-day risk management), or from TTC ratings via an econometric model.
- A TTC PD assesses the borrower’s average credit-riskiness over the entire business cycle. It should be reasonably accurate over longer horizons (e.g. 5 years), but may fail to capture short-term risks.
- TTC PDs are derived from TTC ratings (e.g. agency ratings).

IFRS 9 requires the use of **PIT PDs**. This is in contrast to Basel (II/III) which focuses on TTC PDs.



# Loss Given Default (LGD)

## LGD prior to macroeconomic / forward looking adjustment

- The Loss Given Default is presented as a percentage loss, as at the point of default.
- In general, there are several approaches to estimate LGD:
  - Work-out approach: Calculate probability of cure, force sales discount, probability of repossession, cost of recovery, discount rate, collateral value, etc., then work out the final LGD.
  - Realised recovery approach: Calculate LGD based on the total recovery amount at each point in time divided by total exposure.
  - Historical LGD modelling approach: Forecast LGD by modelling the probability of write-off along with respective LGD by an econometrics modelling methodology.

How does this exactly work?

- Realised recovery approach:

Parameters	2012	2013	2014	2015	2016	2017
Total Recovery Amount in £million	1.2	1.1	2.3	0.4	2.7	3.1
Total Outstanding Balance for defaulted accounts in £million	4	3.9	5.5	2	4.7	5.9
Recovery against outstanding balance for defaulted accounts	30%	28%	42%	20%	57%	53%
LGD	70%	72%	58%	80%	43%	47%

- The bank has received the total realised recovery amount from internal recovery and collection centre. The Credit Risk function has provided the total outstanding balance for defaulted accounts throughout the year. For example, in 2014, the total recovery amount is £2.3m whilst the total outstanding balance for defaulted accounts is £3.9m. The 28% in year 2013 column means that 28% of the total outstanding balance has been recovered, so LGD is 1 - 28% which is 72%.

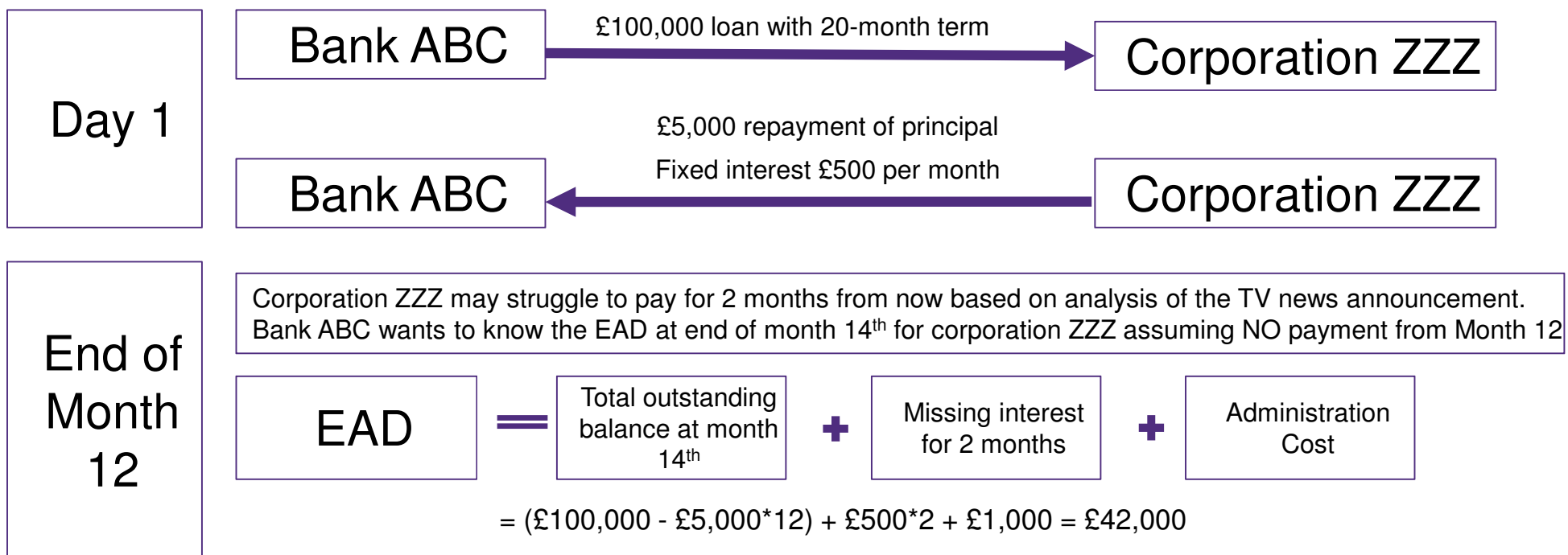
# Loss Given Default (LGD)

## Macroeconomic / forward looking adjustment

- The forward looking components can be taken into account in LGD calculation. This depends on the type of LGD approach adopted by firms:
  - Work-out approach: The forward looking components can be introduced into all LGD parameters.
  - Realised recovery approach: It is necessary to develop an econometric model to inject the impact received from macroeconomic scenarios into the LGD calculation.
  - Historical LGD modelling approach: The LGD model incorporates the econometric modelling mechanism so the macroeconomic scenario can be used directly to calculate the forecast LGD model.

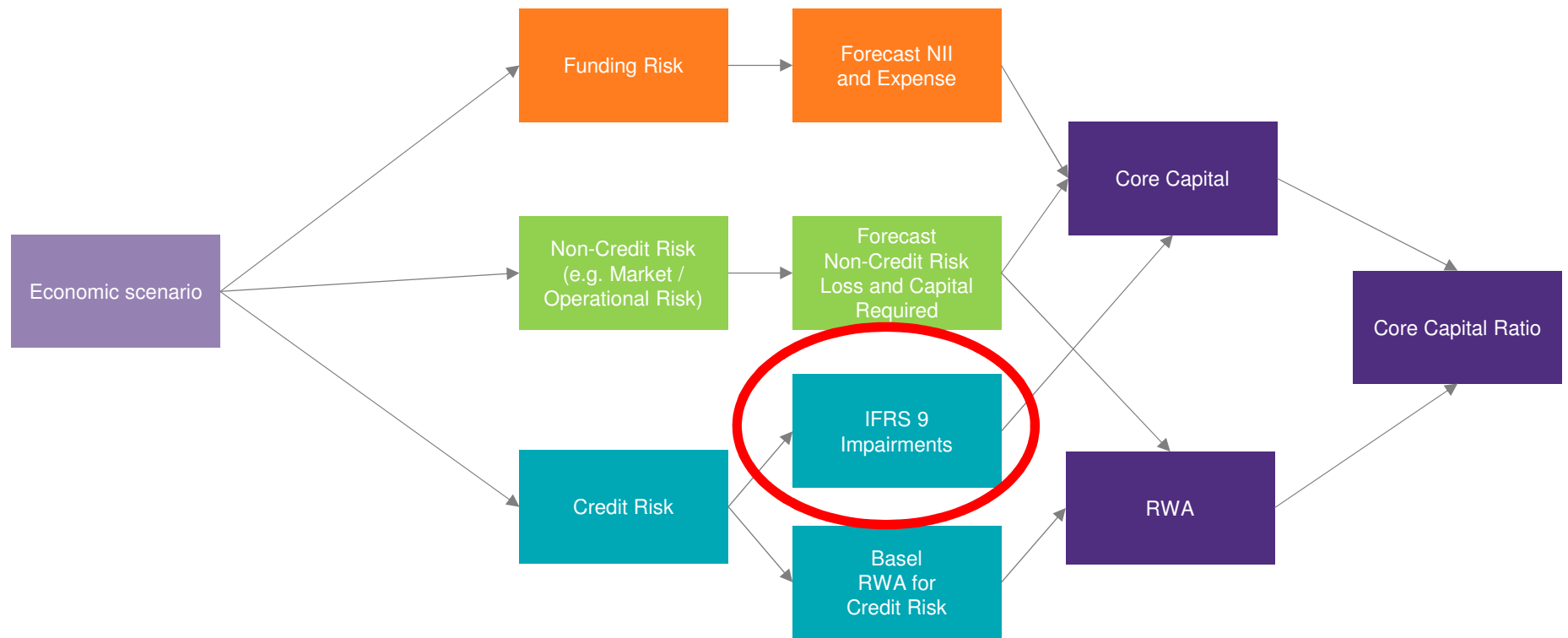
# Exposure at Default (EAD)

- The Exposure at Default is the “total outstanding balance” plus “all associated cost” for the facility at point of default.
- The general calculation will be the combination of:
  - Total outstanding balance;
  - All missing instalments;
  - All missing interest payments;
  - Administration costs;





# IFRS9/IRB/Stress test integration



“Running IRB models does require a significant additional investment in risk infrastructure for banks and building societies wishing to move from the standardised capital approach.

However, we acknowledge **that the impact of the IFRS9 accounting standard**, coupled with the requirement for some banks and building societies to hold additional financial resources, to ensure they are resolvable, that is over and above total regulatory capital requirements, **may now justify the investment**, when previously the business case could not be made.”

**Martin Stewart, Director of Bank, Building Societies and Credit Union, Prudential  
Regulation Authority  
March 2017, BBA**





[grantthornton.co.uk](http://grantthornton.co.uk)

© 2018 Grant Thornton UK LLP. Confidential and information only.

'Grant Thornton' refers to the brand under which the Grant Thornton member firms provide assurance, tax and advisory services to their clients and/or refers to one or more member firms, as the context requires. Grant Thornton UK LLP is a member firm of Grant Thornton International Ltd (GTIL). GTIL and the member firms are not a worldwide partnership. GTIL and each member firm is a separate legal entity. Services are delivered by the member firms. GTIL does not provide services to clients. GTIL and its member firms are not agents of, and do not obligate, one another and are not liable for one another's acts or omissions. This proposal is made by Grant Thornton UK LLP and is in all respects subject to the negotiation, agreement and signing of a specific contract/letter of engagement. The client names quoted within this proposal are disclosed on a confidential basis. All information in this proposal is released strictly for the purpose of this process and must not be disclosed to any other parties without express consent from Grant Thornton UK LLP.



*Any questions?*

# *Thank you for attending*

Please take the time to fill out our short survey

Contact the Financial Services Faculty

 +44 (0)20 7920 8689

 fsf@icaew.com

 [icaew.com/fsf](https://icaew.com/fsf)

ICAEW will not be liable for any reliance you place on the information in this presentation.  
You should seek independent advice.

