Measuring economic downturns: Past recessions and their implication for forward looking provision models as required under IFRS9

Credit Scoring and Credit Control XIII Conference

Mark Somers, Judit Sandor

August, 2013

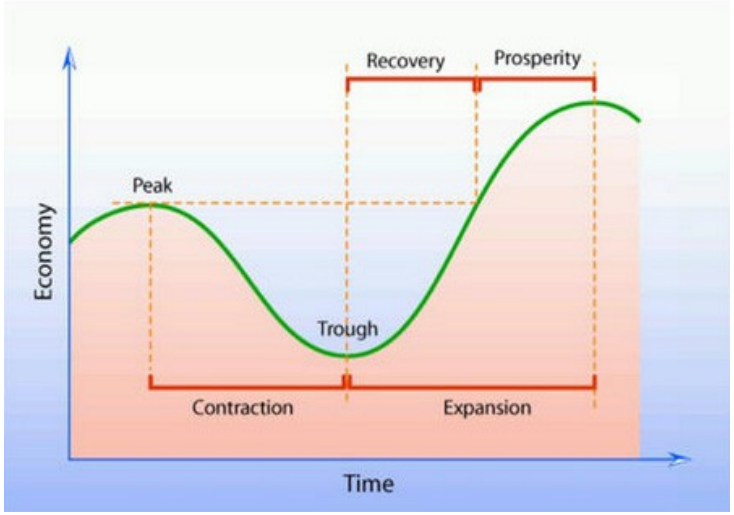
Contents

Overview

- The delayed recognition of credit losses that are associated with loans and other financial instruments was identified during the financial crisis as a weakness in existing accounting *(IFRS, 2013)*
- The 'incurred loss model' that is currently in existence is a backward-looking model hence it delays the recognition of credit losses until it occurs
- Under IFRS 9, alternatives to the incurred loss model are explored that would use information that is more forward-looking
- This paper shows that applying IFRS 9 rules to recent past recessions of the UK economy, credit losses could have been recognised earlier and would have decreased quicker back to pre-recession level
- Linking the provision calculation to economic drivers allows a flexible, forward-looking provision calculation and also enables stressing by different economic scenarios

Business Cycle

- Business cycle is recurring and fluctuating levels of economic activity that an economy experiences over a long period of time
- Recession is a significant decline in economic activity spread across the economy, lasting more than a few months *(NBER, 2010)*



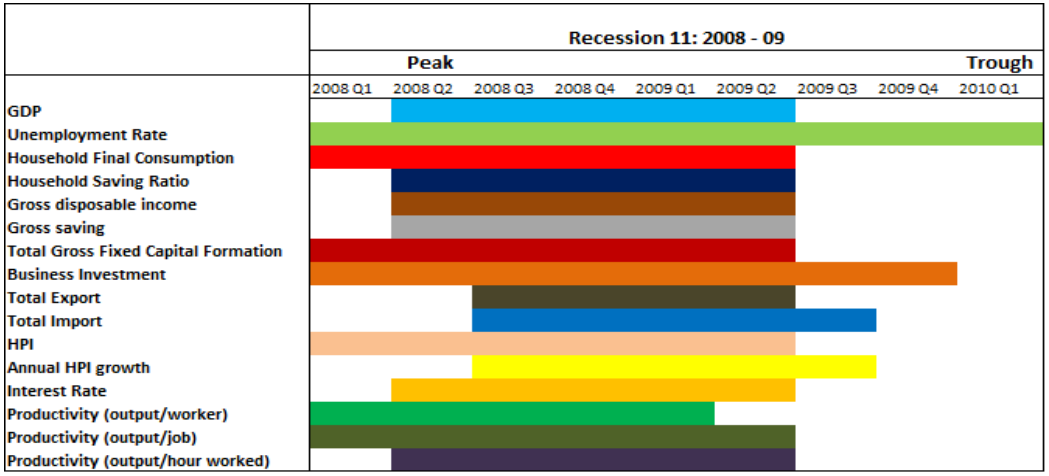
- *Economic Cycle Research Institute* is publishing business cycle peak and trough dates in the UK since the early 1970s, using the same methodology as for the official U.S. business cycle dates *(ECRI, 2013)*
- Based on the ECRI peak and trough dates, the main drivers of an economic recession are identified

Measuring business cycle

- Based on the ECRI peak and trough dates, selected economic variables were plotted when negative growth in that particular economic measure occurred for all past recessions in the UK:

– GDP	- Gross Saving	- HPI
– Unemployment Rate	- Total Gross Fixed Capital Formation	- Annual HPI growth
– Household Final Consumption	- Business Investment	- Interest Rate
– Household Savings Ratio	- Total Export	- Productivity measures
– Gross Disposable Income	- Total Import	

- As an example, plot of the 2008-09 recession is presented below:



Most consistent indicators of recession:

- GDP
- Unemployment Rate
- Total Gross Fixed Capital Formation
- HPI
- Household Final Consumption

Best indicator of the end of the recession:

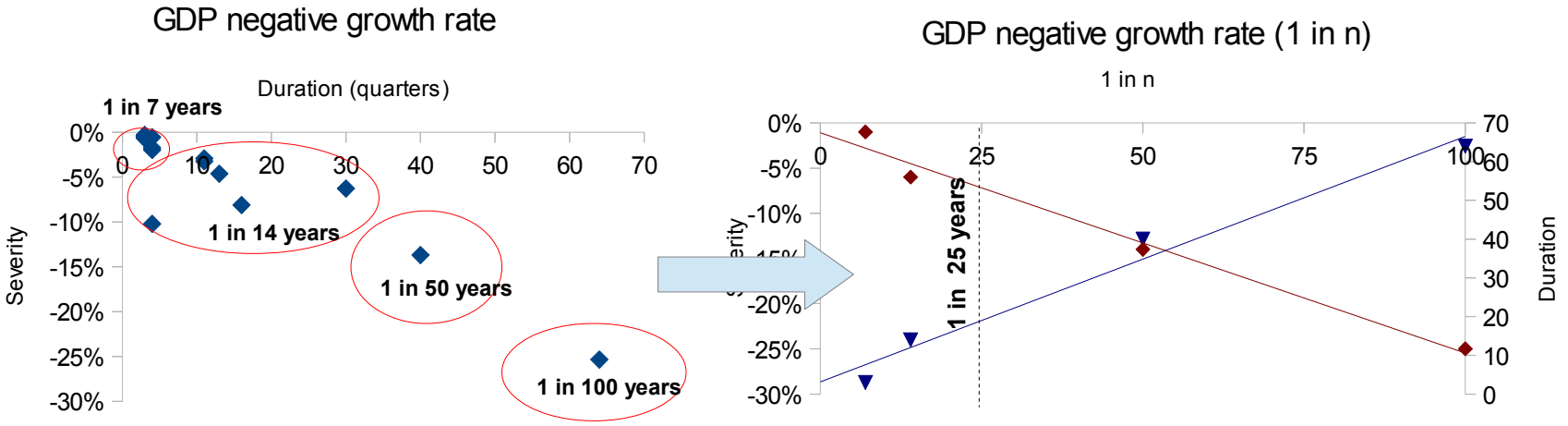
- Unemployment Rate

Measuring business cycle

- The *National Bureau of Economic Research* methodology of dating the business cycles involves measuring a “significant decline in economic activity spread across the economy” using a broad array of indicators, including real GDP, real income, employment, industrial production, and wholesale-retail sales *(NBER, 2003)*
- In this paper, five economic measures were identified as the most consistent indicators of an economic recession moving alongside the ECRI peak and trough dates:
  - GDP
  - Unemployment
  - Household Final Consumption
  - Total Gross Fixed Capital Formation (~Net Investment)
  - House Price Index

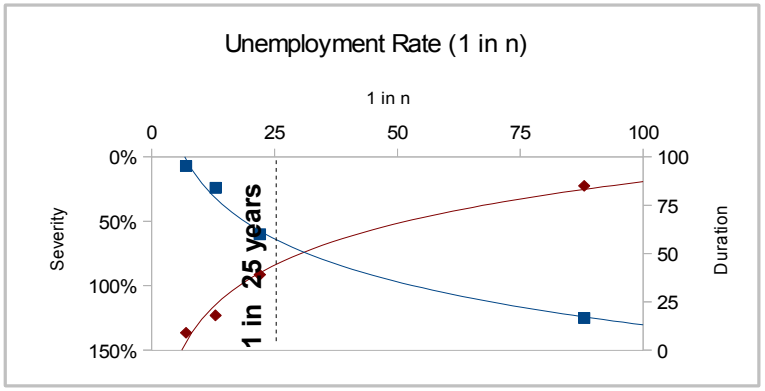
Measuring business cycle

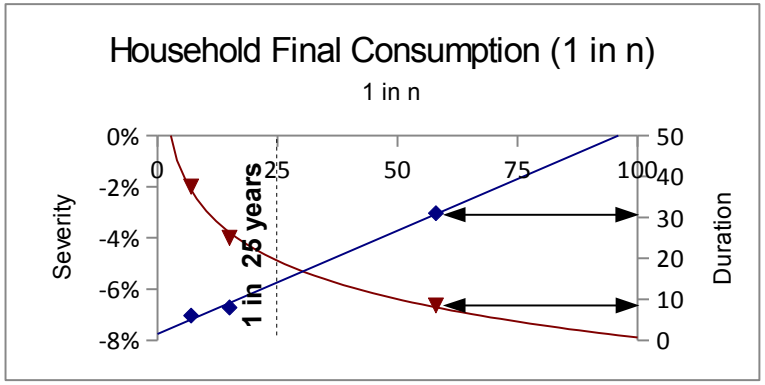
- Measuring business cycle by the five identified economic indicators in two ways, by the greatest decrease (severity) and how long it took to recover (duration)
- **1 in n** economic scenarios: based on the frequency of similar recessions occurred in the past, a probability (1 in n years) measure has been introduced
- Based on the 1 in n scenarios, a relationship has been set up between the severity and the 1 in n measure; and the duration and the 1 in n measure.
- For example, based on a scenario of a downturn expected 1 in 25 years, the contraction in GDP is expected to be as of severity of of -7%, with a duration of 19 quarters to recovery

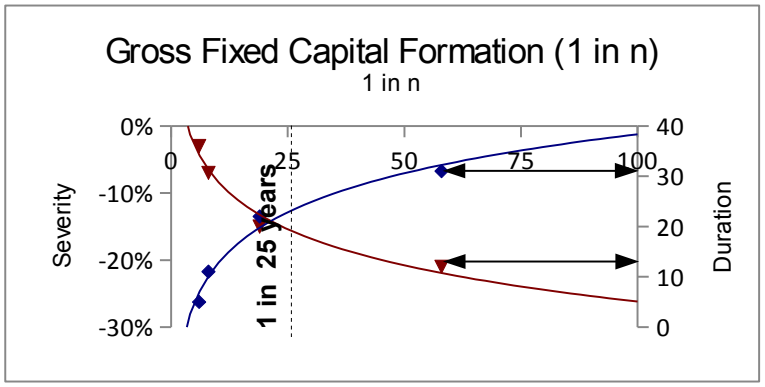


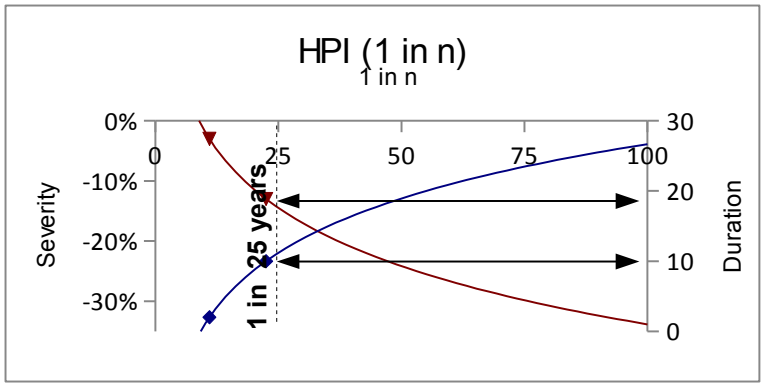
Measuring business cycle

- Similar **1 in n** economic scenarios were plotted for the other four key economic drivers:







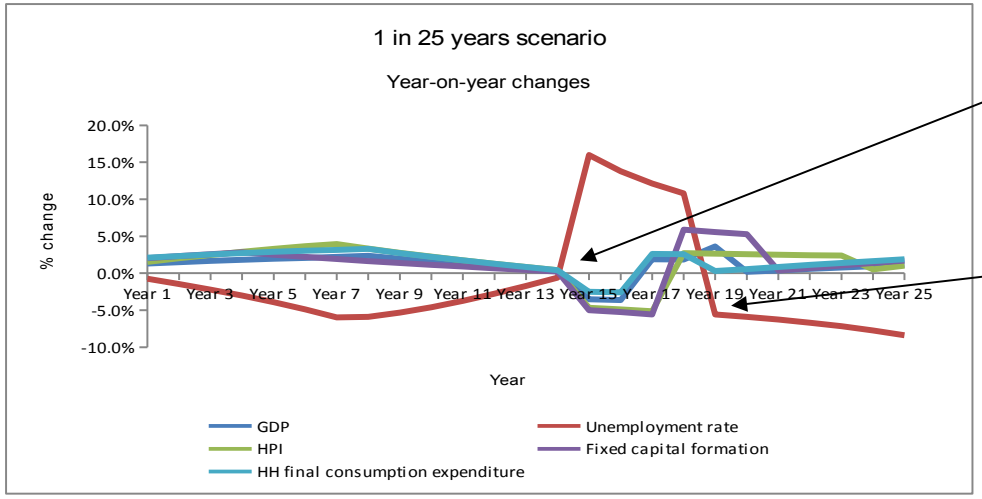


- Arrows in the charts show that there is insufficient data to cover up to 100 years history for that particular characteristic – the last data point could be anywhere on the straight arrow line

Measuring business cycle

- Based on the five identified drivers of economic downturn, an <u>average 1 in 25 years business cycle</u> is drawn:
  - Recession: values are based on the 1 in 25 years scenario
  - Expansion: rest of the time, with an average growth rate

1 in 25 years scenario	Expansion			Recession		
	Increasing growth rate, quarters	Decreasing growth rate, quarters	Severity	Negative growth, quarters	Recovery, quarters	Severity
Unemployment rate	29	27	-38%	16	28	64%
GDP	57	24	29%	7	12	-7%
HPI	37	30	40%	11	22	-14%
Fixed Capital Formation	36	41	32%	11	12	-15%
Hh final consumption expenditure	61	25	47%	6	8	-5%



Recession hits all economic drivers at the same time

Latest to start recovery is unemployment rate

Calculation of Provisions

- International Accounting Standards Board (IASB) and the US Financial Accounting Standards Board (FASB): re-issuing the key accounting standards that apply to banks

- *IAS 39 Financial Instruments: Recognition and Measurement* → *IFRS 9 Financial Instruments*

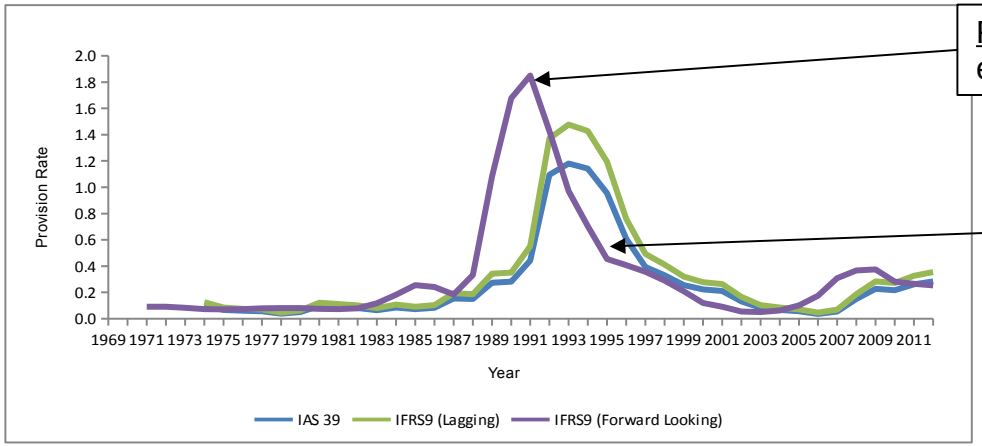
	IAS 39	IFRS 9
Impairment model	Incurred Loss model	Expected Loss model
Expected Credit Recovery	All credits will be recovered until evidence to the contrary (trigger event) is identified.	Not all credits will be recovered. Expected 'cash shortfalls' over the lifetime of the financial instrument.
Provisions	1) Related to the estimated losses to individually significant impaired instruments 2) Related to the remainder of the portfolio that have been incurred, but yet observed	Three-bucket approach: Bucket 1: no identified credit deterioration since initial recognition Bucket 2/3: transfer from bucket 1 if there is significant deterioration in credit quality
Future losses	No provisions are made.	Lifetime expected loss is covered with the likelihood of loss event in the next 12 months.

Calculation of Provisions

- Applying IFRS 9 provision calculation to UK mortgages portfolio
- Data used: UK mortgages data including arrears and possession information, from 1970 to 2012
- The calculations are a *high level approximation* of how provision estimates might change according to three hypothetical scenarios
- Assumptions:
  - IAS 39: 4 year backward looking provision to cover 4 years of historic write-offs - provision rate based on 6+ last year applied to this years 6+ balances.
  - IFRS 9 (lagging): same as IAS 39, but an extra year of backward looking provision is added to cover the increased provisions due to accounts moving to Bucket 2 at 30 days in arrears under IFRS 9.
  - IFRS 9 (forward looking): same as IFRS 9 with lagging, but with forward looking provision estimates (with the benefit of hindsight, hence no forecasting error).

Results – Comparison of Provisions

- Provision Rate is calculated as:
  - Provision Rate = $\frac{Backward \vee Forward\ Looking\ Write-off\ \%}{Proportion\ of\ 6+\ Balances}$
- Comparison of the three provision calculation methodologies:



Forward looking scenario: earlier and higher peak

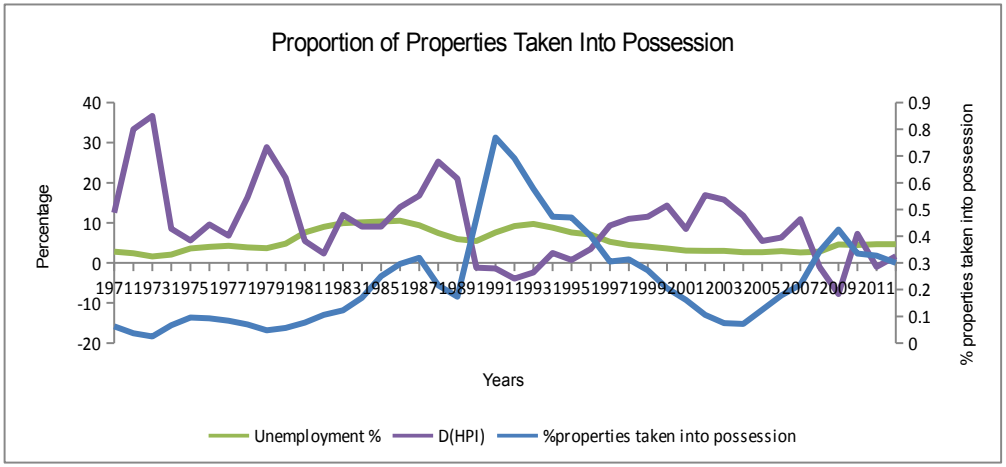
Forward looking scenario: decreases quicker after recession

- Under the forward looking scenario, loss is recognised earlier and peaks higher, at the same time it decreases quicker after the recession is over
- The overall increase in the provision rate is due to the increase in LEL provision for the 30-180 day bucket and higher forecast losses are correlated with higher arrears buckets

Regression Modelling

Proportion of Properties Taken Into Possession

- To extrapolate behaviour to a 1 in 25 years average business cycle, we need to build a model of econometric factors
- Estimating the *proportion of properties taken into possession* enables to link the provision calculation to economic drivers
- Based on the proportion of properties taken into possession, expected write-off percentage is calculated that feeds into the IFRS 9 (forward looking) provision rate calculation



- Two economic variables were particularly highly correlated with the dependent variable:
  - Unemployment Rate (%)
  - Annual % change in HPI

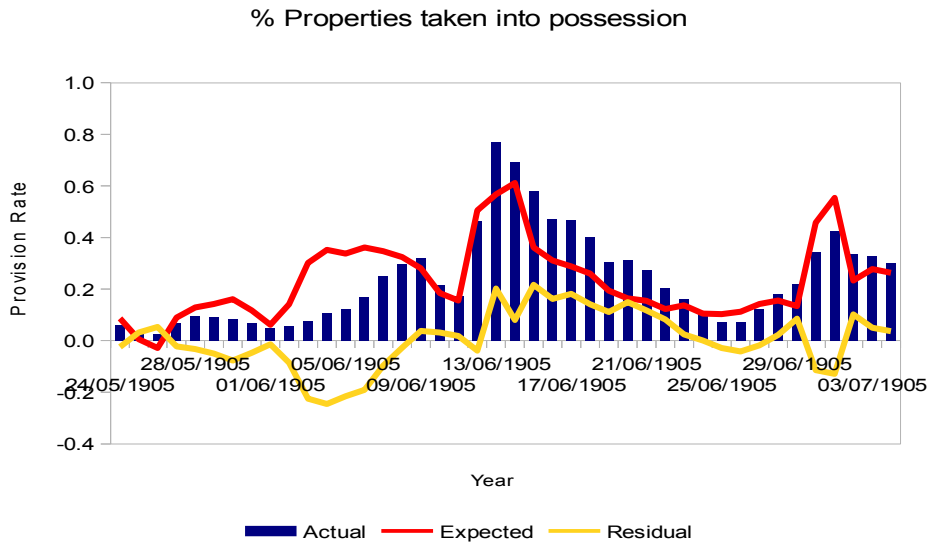
Correlation Matrix	% Possession	Unemployment	HPI
% Possession	1	0.24	0.41
Unemployment		1	0.12
HPI			1

Regression Modelling

Proportion of Properties Taken Into Possession

- A stepwise multiple regression model was fitted:

	Estimate	Standard Error	t value	PR(>|t|)
Unemployment (%)	0.0338	0.0034	9.903	3.37E-12 ***
Annual % change in HPI	-0.042	0.0018	-2.385	0.0221 *
Recession dummy	0.2604	0.5992	4.347	9.58E-05 ***



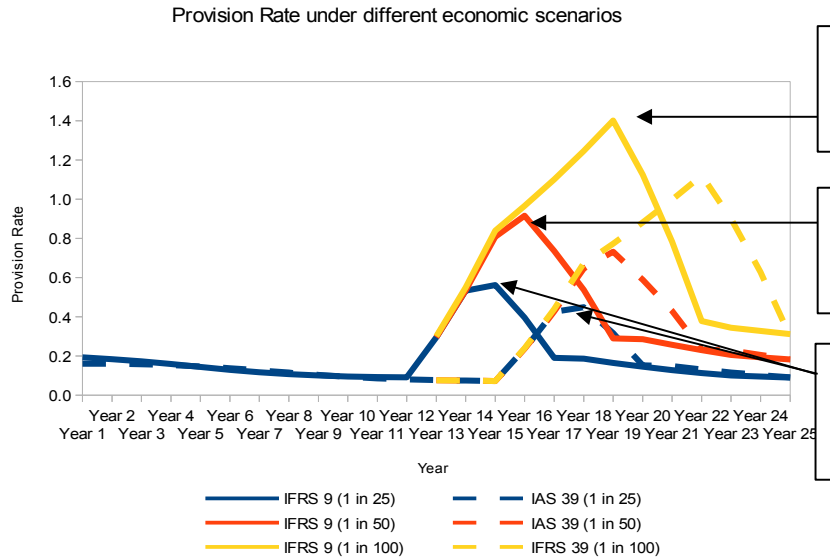
Variables in the final model:

1) Unemployment Rate (%)
2) Annual % change in HPI
3) Recession dummy
   (*1 if economy is in recession*)

Model Adjusted R-squared: 85%

Results – Comparison of Provisions

- Based on the average 1 in 25 years business cycle, the expected provision rate is presented by both IFRS 9 (forward looking) and IAS 39 scenarios
- The 1 in 25 recession is stressed by a 1 in 50 and 1 in 100 years economic scenario (the expansion period is not stressed)
- Comparison of IFRS 9 (forward-looking) and IAS 39 provision rate estimates by different severity of economic scenarios:



1 in 100 scenario: required provision rate is 150% higher than for the 1 in 25 scenario and peaks four years later.

1 in 50 scenario: required provision rate is 63% higher than for the 1 in 25 scenario and peaks one year later.

Provision rates under the IFRS 9 (forward looking) scenarios peak higher and earlier than under the equivalent IAS 39 scenarios

Conclusions

- What we did:
  - Forward looking provisioning is linked to changes in the economy → quicker increase in provision rates due to recession and decreases back to normal as soon as recession is over
  - Stressing provision rates by different economic scenarios → allows better planning and provision allocation based on current and expected future position in the business cycle
  - Greater volatility in provision accounts → higher economic capital requirement
- Areas for further exploration:
  - Small sample sizes in terms of past recessions (about 15 in 100 years) and limited historic economic data availability
  - Key economic drivers might not be hit by recession to the same extent simultaneously – some might be hit harder than others. A simulation could generate a range of plausible scenarios instead of the static results presented in this paper.
  - No guarantee that recessions in the past are going to be similar to future recessions

References

- ECRI - Business cycle chronologies

http://www.businesscycle.com/ecri-business-cycles/international-business-cycle-dates-chronologies

- NBER – The NBER's Business-Cycle Dating Procedure

http://www.nber.org/cycles/july2003/recessions.pdf

- NBER – Conference Paper

http://www.nber.org/cycles/sept2010.pdf

- IFRS - ED Financial Instruments Expected Credit Losses

http://www.ifrs.org/.../ED-Financial-Instruments-Expected-Credit-Losses-March-2013.pdf

Questions