



Cloudy with a chance of opportunity

Pravin Burra



Analytix Engine



ACTUARIAL SOCIETY
OF SOUTH AFRICA

Advancing Actuarial Excellence

Educate • Develop • Uphold

A **crisis** is the current environment not cooperating with our **models** and **operating model**.

So, **readiness** is not a technical artefact – it is a **governance posture** that gives rise to **competitive advantage**.

How stress arises



LOUD / VISIBLE	
SUDDEN	Macroeconomic shocks Global Financial Crisis, COVID, rate & inflation regime change. Everyone sees it coming. Reputational / regulatory Model challenged by the regulator; a fairness or conduct finding. Regulations change, e.g. Directive 11
GRADUAL	Operational / pipeline A feed dies; a bureau field redefined; a silent upstream migration. Population drift Data-generating-process break Payment holidays, relief schemes (restructures) Definition and cumulative process changes
SILENT / HIDDEN	



Think about the mechanism



Population drift

The applicants change. The relationship between features and default still holds.

Fix: recalibrate



Concept drift

The relationship itself changes. Yesterday's predictors no longer predict.

Fix: rebuild



TTC / PIT collapse

Through-the-cycle calibration assumes the cycle reverts. A structural break is not a cycle.

Be explicit about your assumptions



“The model broke” is a lazy diagnosis. Identify the correct cause to ensure the right fix is designed & implemented.



How to prepare



Get the basics right



Simplify, work on your cadence, data layer, model blocks, reporting, business integration - decisioning

Roadmap in place



Challenger models, a playbook so a stranger could run, and a known escalation path.

Early-warning monitoring



PSI, score migration, vintage curves, override & approval-rate drift, watch credit extension — with the action each threshold triggers pre-defined.

Pre-agreed overlay / PMA framework



Who can call one, how it's sized, documented, and unwound — designed in calm, not improvised under pressure.

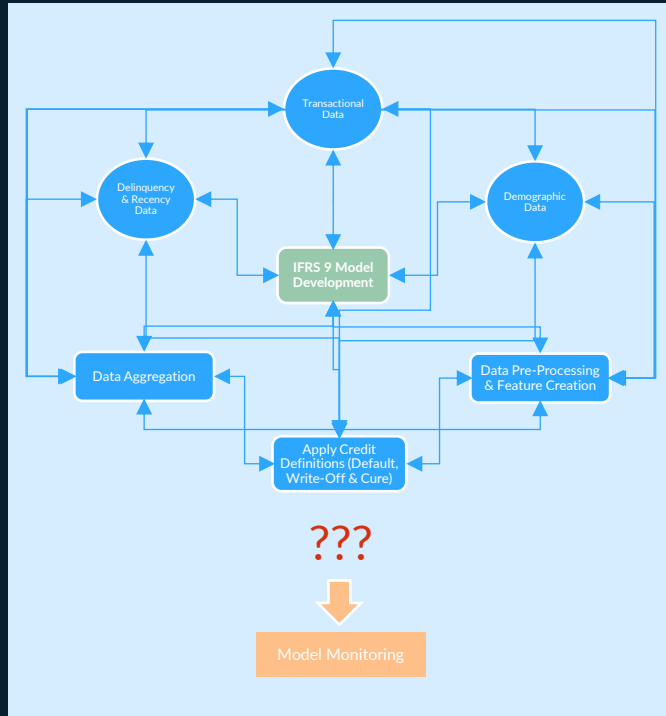
Stress testing & scenario analysis



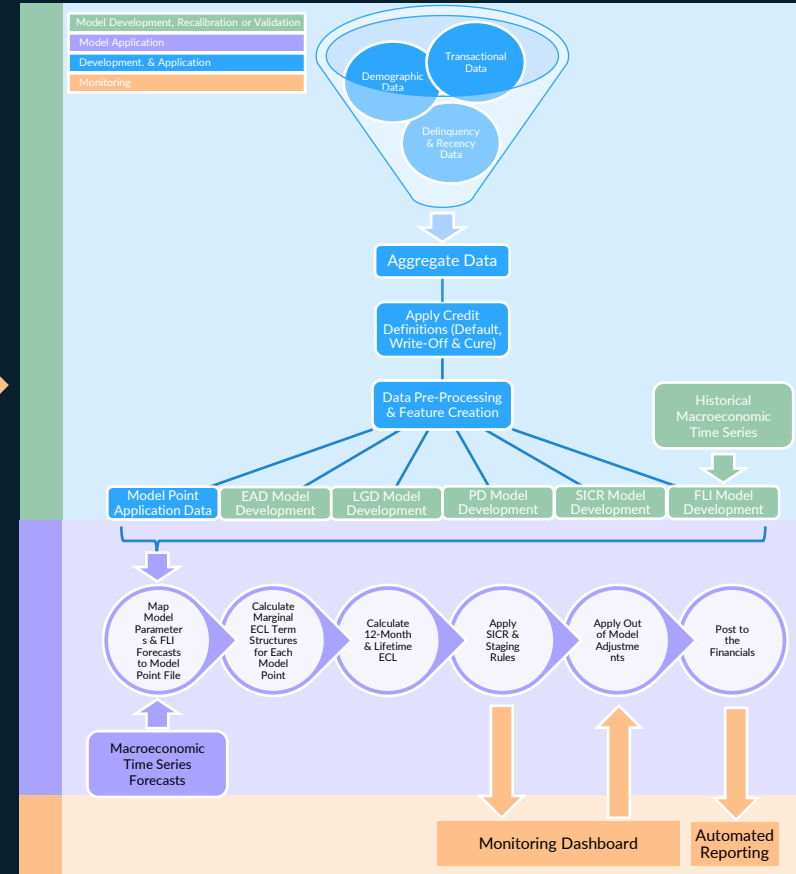
Rehearsal, not a tick-box.
Macroeconomic modelling, real-world business risks, operating model risks
Focus on margin as well as credit losses

Nearly everything that makes a crisis survivable is built in peacetime — and is cheap relative to a bad response.





"Simplicity is the ultimate sophistication" ~ Leonardo da Vinci



Credit risk is created in the **boom** —
and realised in the
bust.

*Managing it across the cycle means countercyclical discipline: restraint when it is easiest to
lend, support when it is hardest.*

Managing across the cycle



Expansion

Peak / turn

Contraction

Recovery



Credit is procyclical. It fuels the boom; its withdrawal deepens the bust. That feedback loop is what you manage against.



Be Warren Buffett of lending. Lend on data-driven value. Focus on price as much as risk – the return matters.



Macro-economic modelling



Some considerations

- Remember the variable scalar approach – what drives the macroeconomic experience?
 - Risk appetite – quality you wrote
 - Average duration – shape of defaults
 - The macro economy
- For IFRS 9, are we breaking the principle of correspondence:
 - Do you calibrate macro variables to the entire portfolio but only apply them to the NPL book?
- Create a credit index vs fitting directly to a PD
 - Easier to understand
 - Allows for heuristic stresses
 - Gives you options when the macros break down, e.g., COVID

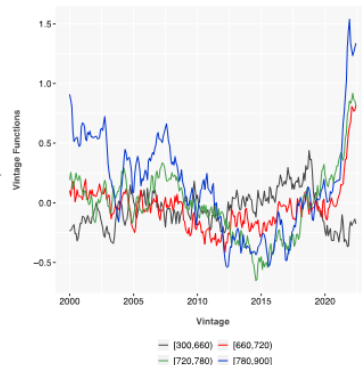
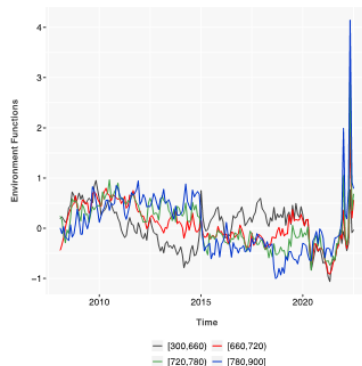
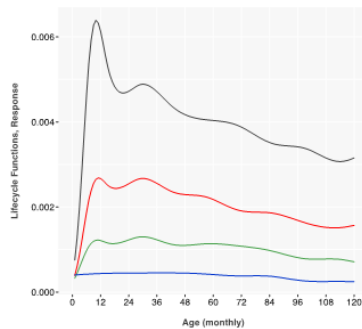
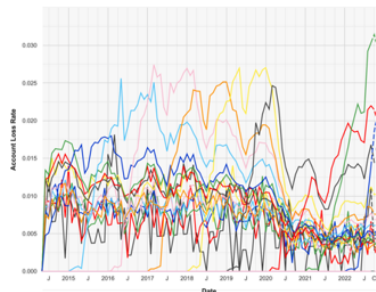


AGE PERIOD COHORT



Performance $\sim$ Lifecycle(age) +
Environment(time) +
Credit Risk(vintage)

$$\log\left(\frac{PD}{1-PD}\right) = F(a) + G(v) + H(t)$$



Estimated via Bayesian Age-Period-Cohort
algorithm of Schmid and Held,
Journal of Statistical Software, 2007



Anti-selection/Adverse-selection



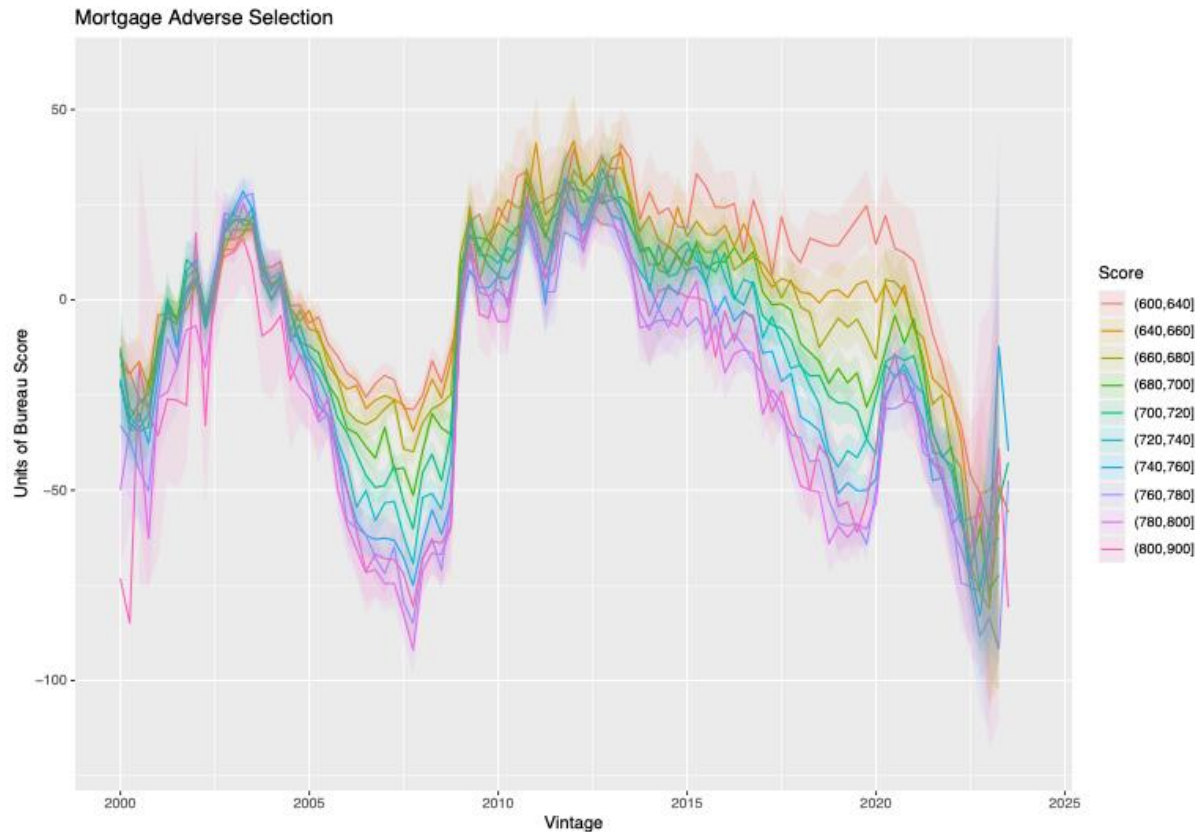
According to Joseph Breeden, adverse selection occurs when loan quality is not as expected by PD / pricing models or recent experience.

Adverse Selection measures the unexplained vintage performance, one summary statistic per vintage.

It is a **model residual**, but it is not random noise. It measures **personality traits** not observable from bureau data.



Anti-selection/Adverse-selection



References



- Petrus Strydom did PHD in decomposition in a South African context
- Joseph Breeden (Deep Future Analytics)
 - Predicted the US mortgage crisis as early as Feb 2006
 - Provided some of the input for this presentation
 - APC method
 - Antiselection



Approvals considerations



TTC calibration

Default-rate-to-TTC conversion and rating philosophy that hold across regimes.



Cycle indices

An explicit measure of where you are, to translate PIT ↔ TTC.



Margin of conservatism

Add-ons for data and estimation uncertainty, per SARB / EBA expectations.



Downturn LGD

Loss estimates anchored to stressed conditions, not the benign average.



Scenario design & FLI

Forward-looking macro scenarios that span the cycle, not extrapolate the present.



Monitoring across regimes

Distinguish ordinary drift from a genuine turn before you recalibrate.



The chance of opportunity



Reduces friction



Get the basics right

Simplify, work on your cadence, data layer, model blocks, reporting, business integration - decisioning



Roadmap in place

Challenger models, a playbook so a stranger could run, and a known escalation path.

Creates management capacity

Builds trust, beats competitors



Early-warning monitoring

PSI, score migration, vintage curves, override & approval-rate drift, watch credit extension — with the action each threshold triggers pre-defined.



Pre-agreed overlay / PMA framework

Who can call one, how it's sized, documented, and unwound — designed in calm, not improvised under pressure.

Clarity of purpose & decision rights

Better strategy



Stress testing & scenario analysis

Rehearsal, not a tick-box.
Macroeconomic modelling, real-world business risks, operating model risks
Focus on margin as well as credit losses

Nearly everything that makes a crisis survivable is built in peacetime — and is cheap relative to a bad response.

Our job shifts from optimising the model to governing decisions



PRINCIPLES THAT OUTLAST ANY SINGLE CRISIS

- 01 Models encode the past;** crises are the future refusing to match it.
- 02 Judgement and governance matter most** exactly when the model matters least.
- 03 Preparation is cheap;** a bad crisis response is not.

You cannot predict the next crisis — but you can be the team that has already rehearsed and therefore outperforms peers.



Analytix Engine

Pravin Burra

pravin@analytixengine.com

+27 82 336 1515

www.analytixengine.com

