



Economic Scenario Testing

Overview of the Euristix Approach



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Macro-economic forecast adjustments are a key concern within the industry currently



Basel 2

- Huge industry focus on the Basel 2 framework
- A key aspect of this is macro-economic stress testing of all key forecasts to understand capital requirement
- Euristix has become renowned as an expert in the field both and is consulted by the FSA for methodology feedback and critique
- Extensive project work in the UK and Europe

Stress Testing and Scenario Analysis

- The application of stress and scenario testing has a wider remit than simply attaining Basel compliance
- Euristix has undertaken both long and short term scenario testing engagement for lenders and funders
- This has enabled us to develop our innovative IP in this area

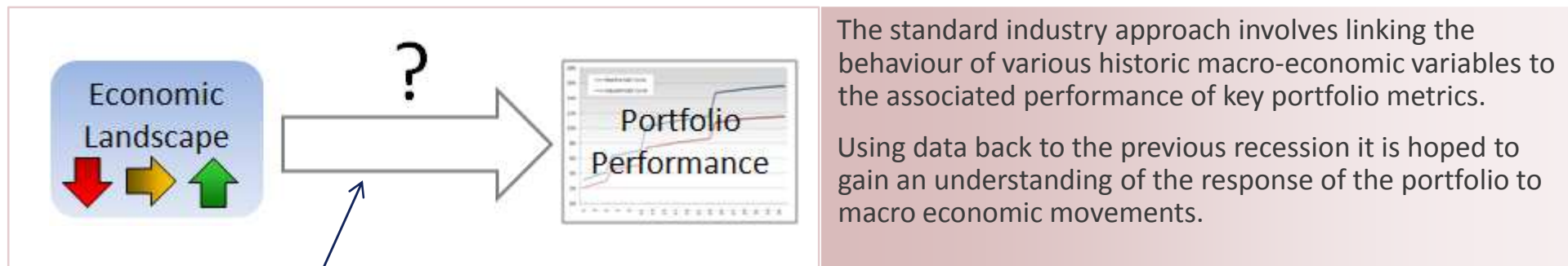
Mortgage Management Service

- Euristix offer a mortgage portfolio management service
- A key part of the toolset associated with the service is the macro-economic adjustment of models such as pre-payment and default

Numerous approaches have been used within the credit industry to re-shape forecasting models

	Outline	Pros	Cons
Apply a Basic Trend Factor	Following observed deviations from expectation, a simple corrective factor is applied to forecasts based on the size of this deviation	<ul style="list-style-type: none"> • Quick to implement 	<ul style="list-style-type: none"> • Non-adaptive • Purely reactive • Poor results in volatile landscape • No macro-economic basis
Constant Model Updates on Recent Data	Use recent payment performance to regularly re-build short outcome models and cascade performance forwards for longer forecasts	<ul style="list-style-type: none"> • Based on latest data points • Regularly refreshed curves 	<ul style="list-style-type: none"> • Purely reactive • Very resource/cost intensive • No scenario analysis to support business decisions, grow funder confidence etc.
Stress Performance with Previous Economic Downturns	Map macro-economic indicators to portfolio performance using previous economic cycle fluctuations, then project forward using anticipated economic forecast	<ul style="list-style-type: none"> • Macro-economic basis • Forward looking forecasts 	<ul style="list-style-type: none"> • Models irrelevant mechanics of previous recessions and ignores recent market developments • Difficult to unpick correlations • Requires economic 'crystal ball'
Full Scenario Testing Solution	Model account-level measures for affordability and equity to give customer susceptibility to economic stresses. Compile this into a fully flexible stress testing tool	<ul style="list-style-type: none"> • Class leading solution • Acc. level macro-economic basis • Non-data intensive • Full flexibility 	<ul style="list-style-type: none"> • Greatest up front investment • Relies on the quality of the account level information

Using past economic developments to predict the future is fraught with problems...



The standard industry approach involves linking the behaviour of various historic macro-economic variables to the associated performance of key portfolio metrics.

Using data back to the previous recession it is hoped to gain an understanding of the response of the portfolio to macro economic movements.

But...

- **Extensive data requirements** to get information on the portfolio back to the previous recession. This is further complicated by the undoubted changes within the business and the portfolio over that time.
- The danger is that these models capture more about the **mechanics of past recessions** than they do about true book performance. The models then collapse when economic conditions fall outside previous experience,
- This is precisely what has happened in the most recent downturn. Backwards-looking models based on recession information from the early 90's **failed to capture portfolio performance** in the latest downturn. The drivers of recession have been fundamentally different this time and models based on historic economic data **perform badly outside of previously observed economic conditions**.
- As portfolio level tools these models attempt to predict overall book performance – they **do not highlight the high risk individuals or segments** which would allow pro-active remedial actions to be taken.

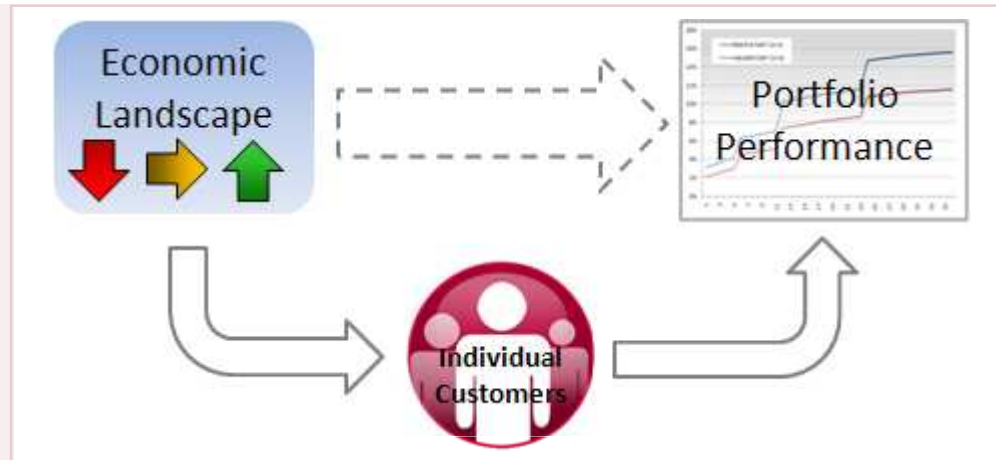
The Euristix Approach

An innovative approach allows Euristix to provide a hugely flexible solution

Portfolio performance changes because the behaviour of the individuals who make up that portfolio changes.

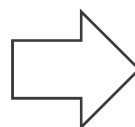
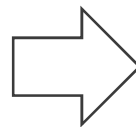
By understanding the impact of economic changes on individual's circumstances, Euristix produce a flexible and informative scenario testing framework.

This unique approach gives a solution which avoids the many pitfalls outlined on the previous slide and which has the advantage of giving a true account-level picture.



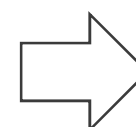
Economic Environment

- Unemployment
- Credit availability
- Inflation
- Consumer confidence
- FTSE 100
- BoE Base Rate
- House Price Index
- Etc.

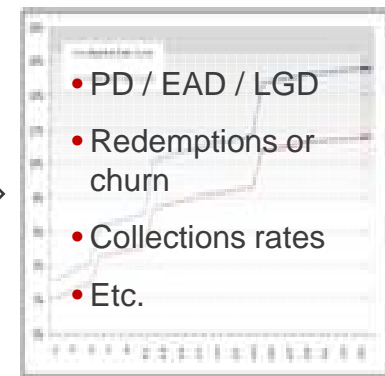


Customer's Circumstances

- Affordability
- Equity
- Liquidity
- Attitude



Portfolio Performance



The Euristix approach brings a large number of benefits

Account Level

The methodology uses **account-level models** to ensure the final resulting macro-economic adjustments are based on the specific situation of the customer base. This gives an understanding not just of portfolio performance, but which segments of the population will drive those performance changes.

Leverage Existing Analytics

Where appropriate, the solution design **will incorporate existing segmentations and analytics** that have been developed and accepted within the business.

Forward Looking

Key to the approach is that it **does not make the mistake** of assuming that previous economic downturns are the same as this one. With different macro-economic effects, debt levels and market environment, using past downturns to adjust forecasts leads to poor results.

Non – Data Intensive

Aligned with the above, the methodology **does not require large extracts of irrelevant, out of date data**. This makes it possible to deliver the solution more quickly based on what is happening in your business now.

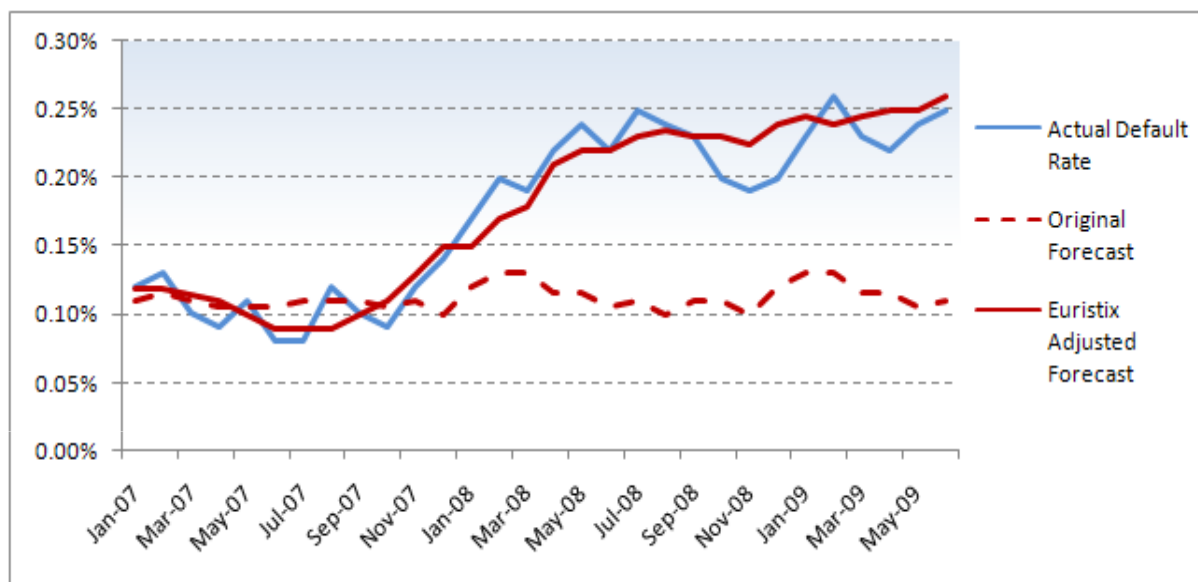
Fully Flexible Tool

The approach allows for consideration of a **full range of macro-economic situations**, allowing the production not only of revised forecasts for the current climate but also stress-tested versions for improved management planning.

The recent economic downturn has provided chance to back-test the methodology...

The recent economic downturn has provided Euristix with an opportunity to back-test the performance of the methodology under real economic downturn conditions.

Applying the methodology as at January 2007 and entering a 'scenario' that matched the real future economic development showed how well the Euristix adjustments matched the actual observed portfolio performance.



The Euristix approach has numerous applications in the industry

- Default and redemptions within mortgage portfolios
- Cash recoveries performance for DCAs or collections teams
- Arrears performance for provisioning and capital adequacy
- PD / EAD/ LGD testing for Basel 2 and customer management strategies
- Cash flow and new purchase forecasting within the asset-based sector

Euristix

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