CRIF DECISION SOLUTIONS
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Forward looking analytics

Using macroeconomic aggregates to strengthen rating systems.

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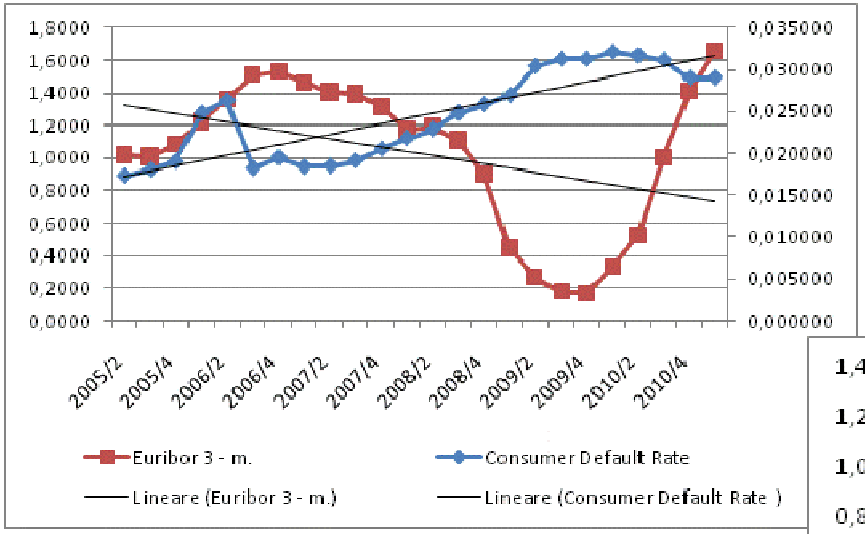
Introduction

- For years using macroeconomic aggregates to develop and manage Rating systems has been a much discussed subject
- In the past the attempt to put macroeconomic aggregates in scoring / rating models has not been successful
- Economic crisis and the new Basel III have returned priority to this argument according to Banks and regulators interests
- CRIF has identified a way to test this approach under new assumptions

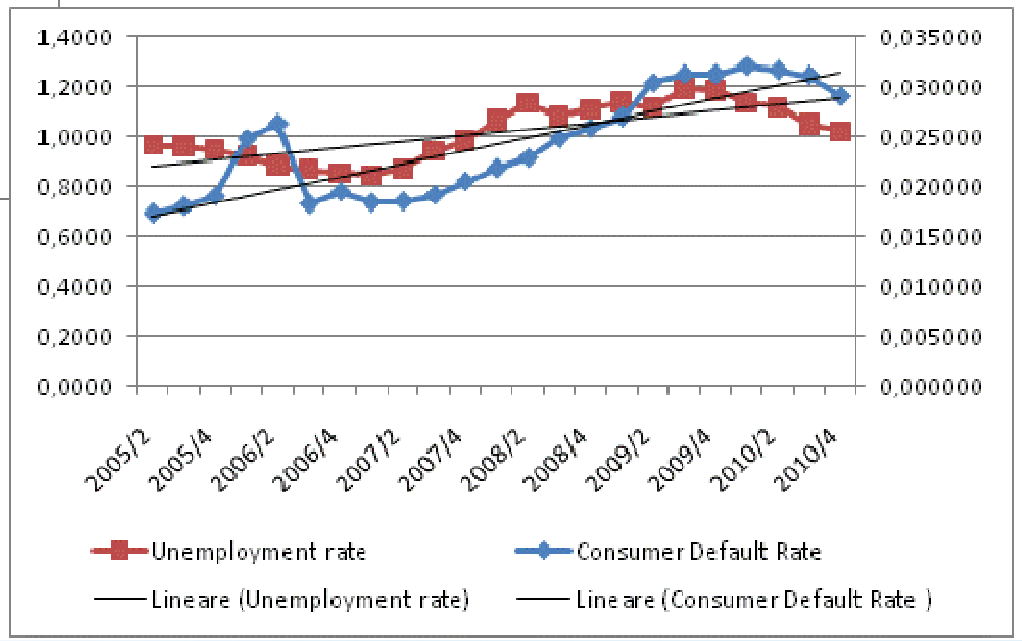
Empirical considerations

Correlation between Macro Variable and Credit Risk

Evolution of Italian consumer default rate and Euribor 3 months



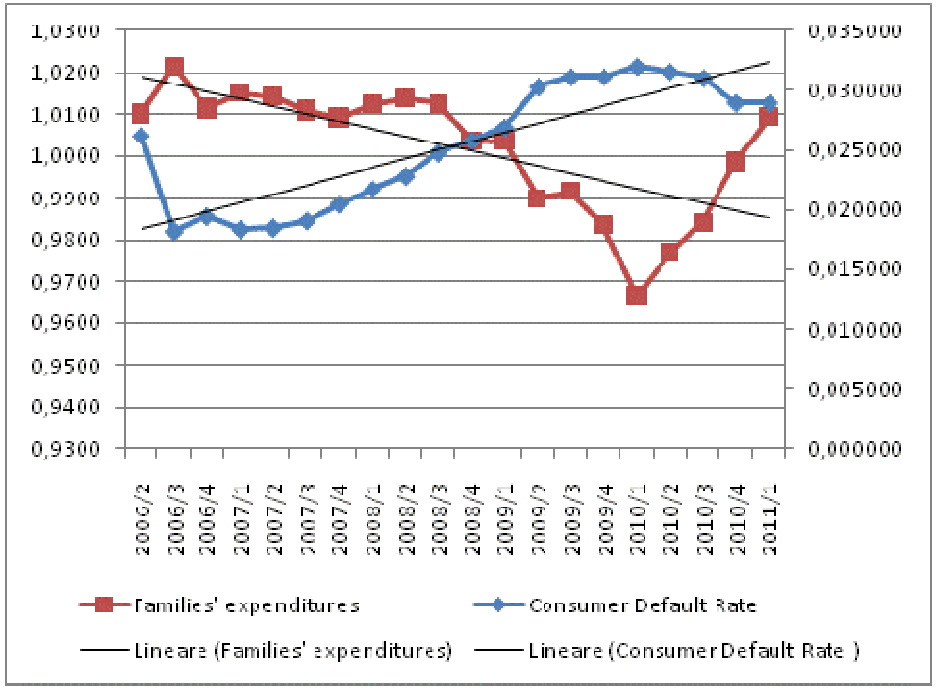
Evolution of Italian consumer default rate and Unemployment rate



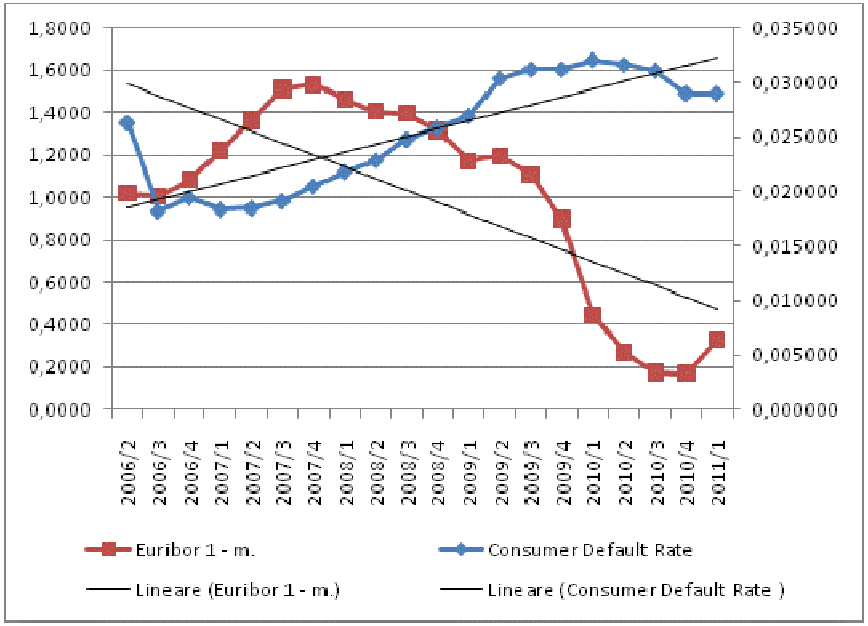
Empirical considerations

Correlation between Macro Variable and Credit Risk with a lag of 12 months

Evolution of Italian consumer default rate and Italian families' expenditures



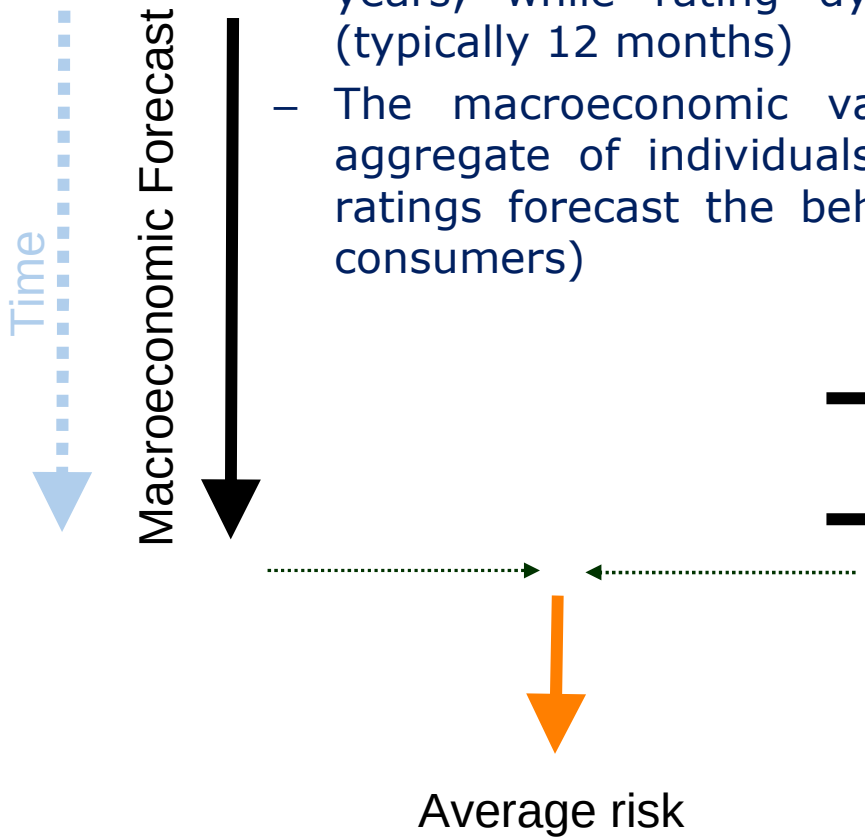
Evolution of Italian consumer default rate and Euribor 1 month



Conceptual aspects

Apparently it is difficult to combine macroeconomic variables and Ratings as they have a different time frame and forecast perspectives:

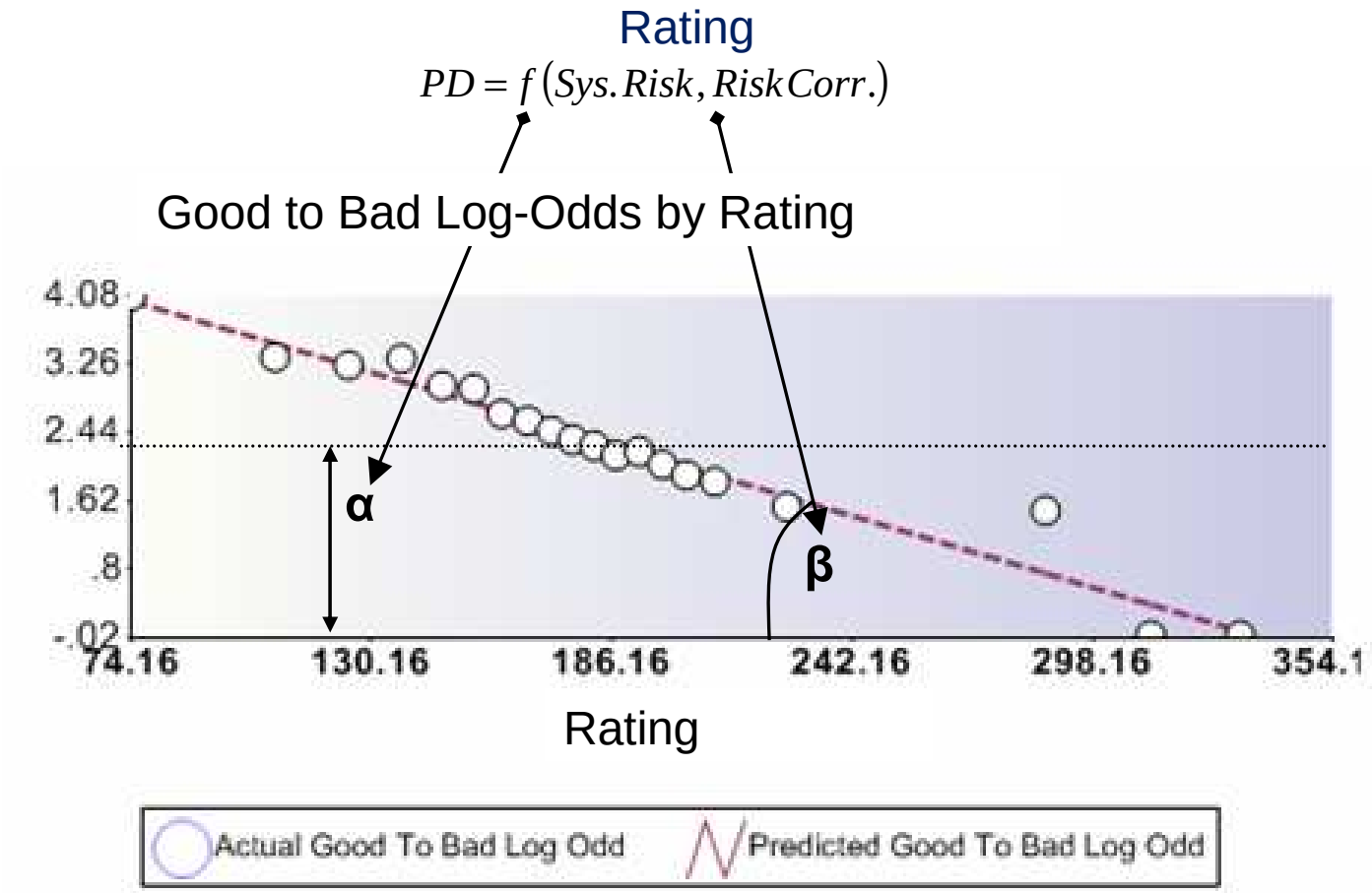
- The dynamics of macroeconomic variables is analyzed along years, while rating dynamics is analyzed on shorter term (typically 12 months)
- The macroeconomic variables forecast the evolution of an aggregate of individuals (companies, families, workers), while ratings forecast the behavior of single individuals (companies, consumers)



However there is a contact point: the average risk of a credit portfolio is similar to a macroeconomic aggregate

Application in Rating system: experimental assumptions

The knowledge of the expected risk allows to early adjust a rating model according to these functional properties:



Processing

In order to define and test the adjustment procedure in risk forecasting based on the macroeconomic variables, CRIF has used its Credit Bureau Score (Perform). The identified procedure consists of the following steps:

1. Prepare a macroeconomic variables time series (7 years) after removing seasonal effects

2. Set up a Perform time series (7 years), the CRIF Credit Bureau Score, within its relative performances

3. Estimate the time series alpha and beta parameters as result of PD function estimation based on Perform

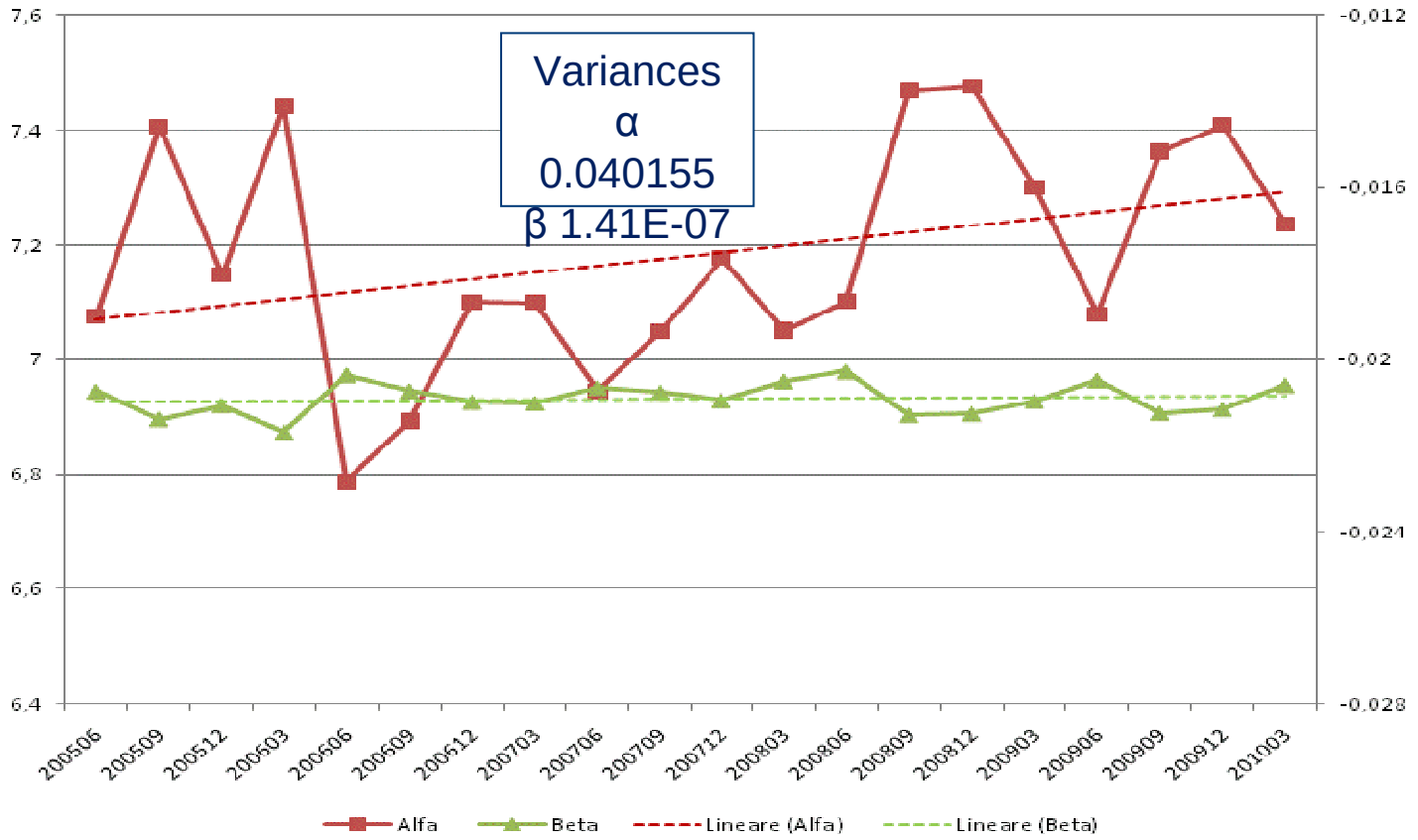
4. Realize a macroeconomic model in order to forecast α

5. Estimate β parameter

6. Verify the results after introducing the alpha and beta estimated values in PD function estimation

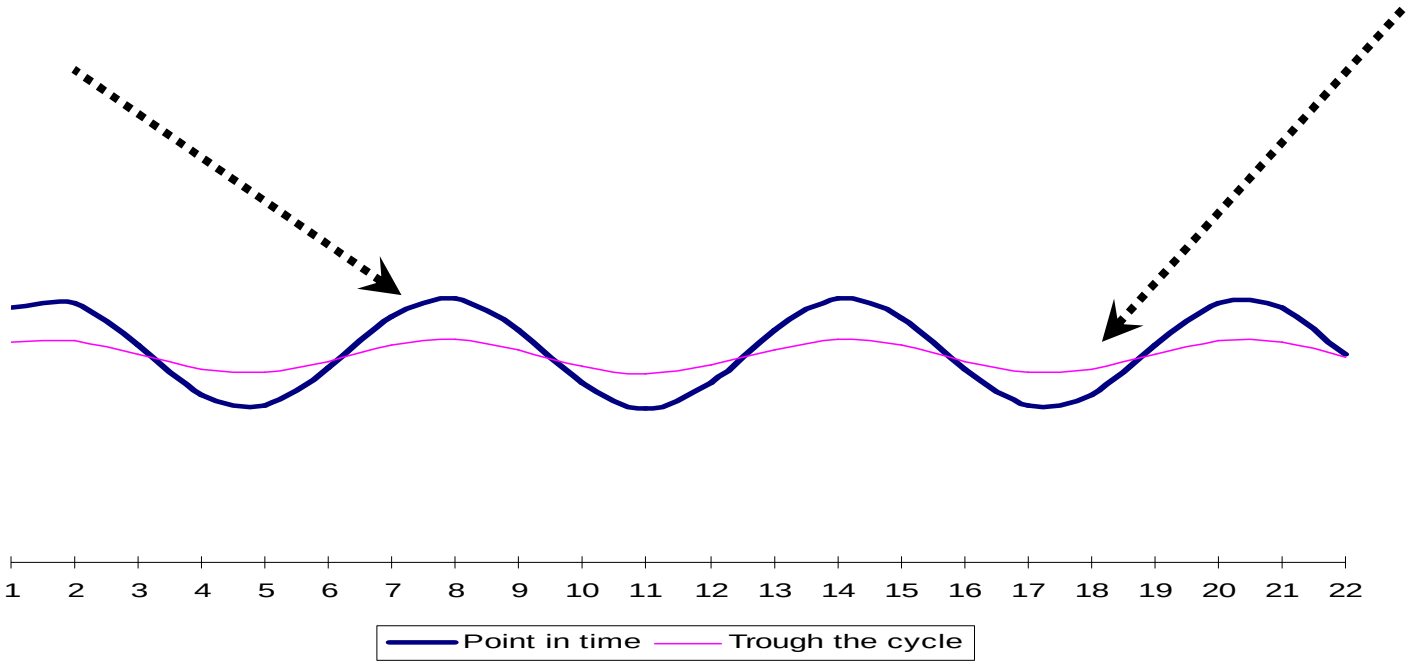
Collateral results

The β parameter seems to by very steady along the time and mostly not correlated with any macro economic variables (no corr index is over 20%)



Collateral results

The conclusion we reached is that scoring development techniques, adopted in the last 5 years to support internal Rating System, have made less “point in time” and more “trough the cycle” the scores



Results

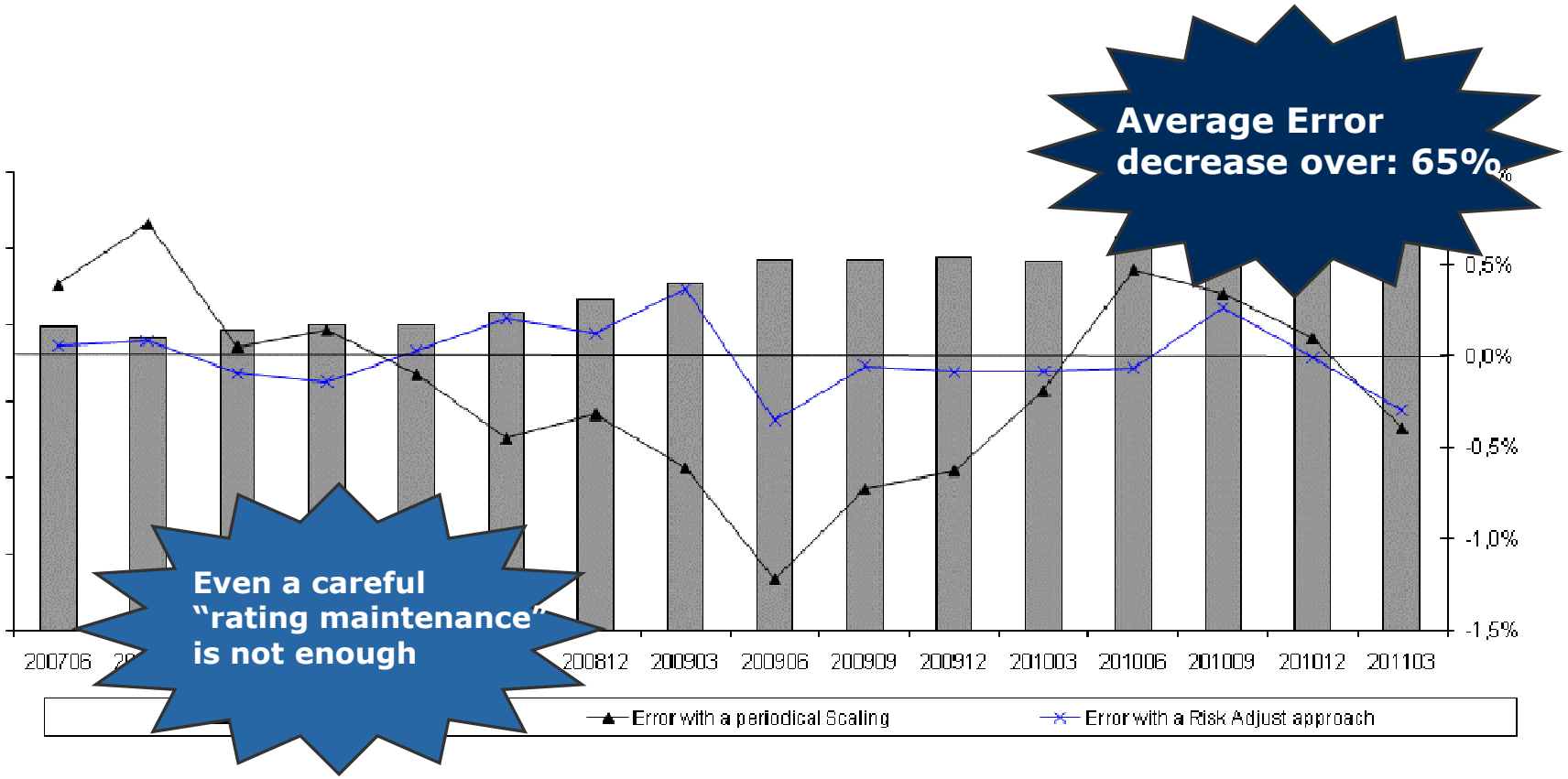
- The α macro model has pointed out an R-Square of ≈ 0.73 and the variables parameters signs are coherent with their economical interpretation

- The β model as to be regarded more as a tendency model than a forecasting model and has pointed out an R-Square of ≈ 0.66

- These models are the results of a work done in 2009 and refreshed in the mid of 2011

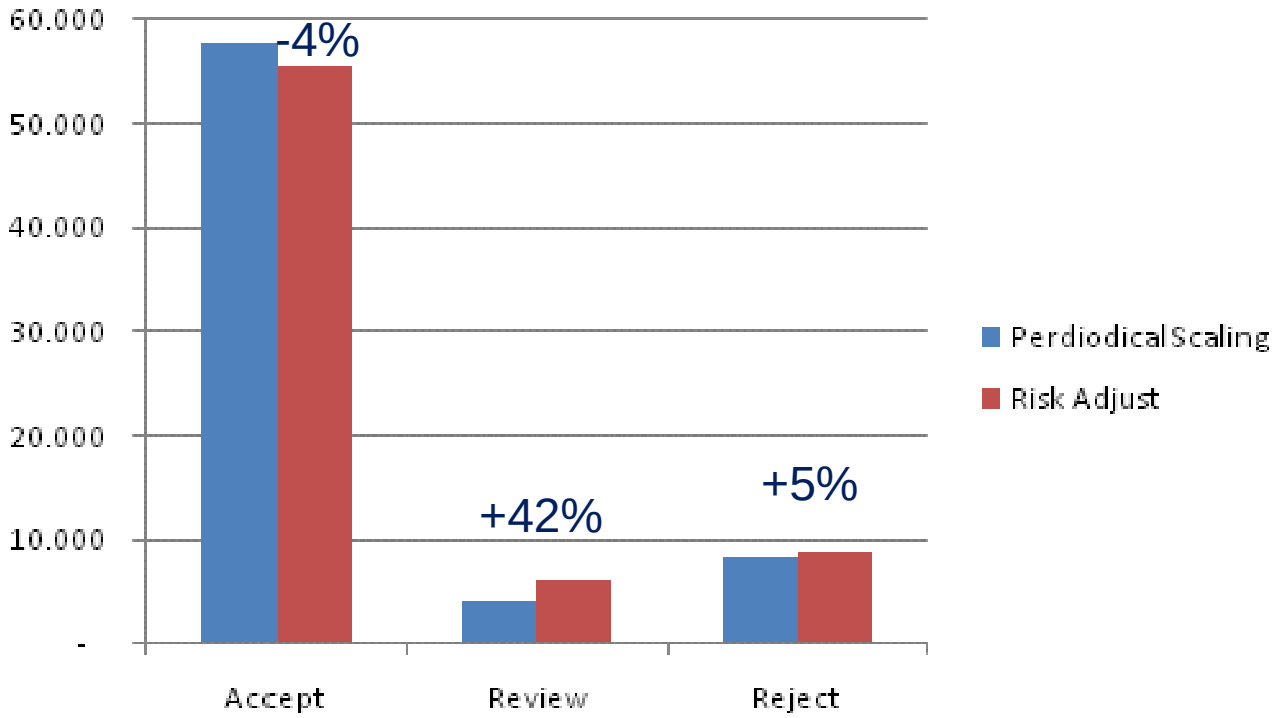
- This second generation of models has remarked and enforced the good results obtained in 2009: for sure the time series extension will bring further benefits

Results – Accuracy of default rates prediction 2



Results – Impact on credit policy

Impact observed on June 2009 *



* We chose the period where we have observed the max and quickest deterioration of default rates

But was the reassignment correct ?

•The ***automatic acceptation*** area was set in a range from 0% to 5% of default probability: the observed default rate on the acceptation area moves from ***2.3% to 2%*** if classified, respectively, with the scaled PD or the risk adjust model.

•The ***review area*** was set in a range from 5% to 10% of default probability: the customers, classified in the acceptation area by the scaled PD and reassigned to the review area by the risk adjust model, have pointed out an ***observed default rate of 8%*** !

•The ***rejection area*** was set in a range from 10% to 100% of default probability: the customers classified in the review area by the scaled PD and reassigned to the rejection area by the risk adjust model have pointed out an observed default rate of 19% !

So the reassignment of customers to different decision areas is coherent with the observed risk !

Conclusions

Practical considerations:

- The use of risk adjust approach has to take into account the periodic review of the model: the decision to review the model has to be taken also considering the Economy context evolution.

- The use of risk adjust approach does not bring too much implementation complexity to a bank, as it is not much more complex that manage the scaling parameters of a scorecard.

Conclusions 2

Credit process considerations:

- The Risk Adjust approach is more useful in crisis or in economic growth periods: when the economic situation is stable it does not influence, as expected, the risk estimations.
- The Risk Adjust approach, if integrated in an IRB system, is suitable to estimate Capital Requirements and Provisions
- Can simplify the "stressed PD" estimation under the hypothesis of stressed macroeconomic components and portfolio scenarios
- Can improve the management of credit policy based on the expected risk with no increase of instability in any rating evaluation

THANK YOU
FOR YOUR ATTENTION

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