A NEW MODEL TO MEASURE THE CREDITWORTHINESS OF BORROWERS IN FIXED TERM LOANS AND REVOLVING FINANCIAL PRODUCTS.

The work presents the main features of a new statistical model developed by the authors, useful to measure the borrower's ability of fulfilling his financial obligations.
We examine the two hypotheses in which the loan has a fixed term (e.g. an unsecured personal loan to be periodically repaid) or it hasn't (e.g. a revolving credit card).
In the first case, once we have fixed an evaluation time, for instance the moment when the credit is granted, we can calculate the ratio between the random net present value generated by the payments the customer will do before a given date and the net present value of the payments related to the contractual obligations until to the same given date.
In this way, we will obtain a sequence of random variables, one for each instalment due, with values in the interval with extremes 0 and 1: the former will be associated to those customers who never pay and the latter is typical of the customers who regularly pay the installment due.
For a given observation period, the estimate of the mathematical expectation of the random variable in term of the set of the application and credit behaviour variables known at the initial time can be thought as an application-score.
We can interpret this ratio from different points of view: one of these interpretations is the relationship between the mathematical expectation of the ratio evaluated at the final time of the operation and the probability of default, the loss given default and the time of default.
It is possible to generalize the model for products that haven't a fixed term, as, for example, a revolving credit card.
Given an evaluation date, we suppose that the credit line can realize, at some future random time, only two states, one with an economic loss and the other without.
In order to modeling the probability of default, we make use of the survival analysis techniques. By analogy with the first case, we will calculate the ratio between the actualized payments due by the customer before the evaluation date plus the random actualized cash flow until the credit line will expire and the actualized loans granted before the evaluation date plus the funds the customer will randomly take from the credit line before expiration.