RCA Insurance Pricing Models in the presence of Black box

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ABSTRACT

Article 132 of Legislative Decree n.209/2005, as amended by the Act of 24 March 2012 n.27, introduces the ability for drivers to install on their cars electronic mechanisms that record the activity of the vehicle for eventual reductions of tariffs applied by insurance companies.

The current legislation provides, therefore, that drivers, who wish to, can mount on their car black boxes, so that the insurance company can monitor their every movement and thus avoid, among other things, simulations of claims.

The black box, as known, has many positive effects on the number of claims and average cost: a selection of policyholders through the installation of the black box, which leads to the formation of a less risky portfolio of insured; the improvement of the accident claims resulting from the fact that the insured feel controlled by the black box; all the benefits that flow from control of the dynamics of claims and related costs.

The present work has the objective to build a pricing model for the determination of an award as possible commensurate to the specific level of claims in each risk assumed, through the identification of synthetic indicators of driving behavior likely to become variables of tariff (risk factors) that can significantly influence the accident rate. The statistical models used have been tested in order to measure the accuracy of the estimates of the models themselves, and to identify a statistical model able to explain the variability of the portfolio.

The intention is to apply actuarial techniques used in pricing in order to identify an innovative methodological approach capable of determining a tariff a priori, clear and transparent, such as the so-called "pay per use" in which the insured is aware of how much it costs per kilometer in various driving conditions or tariffs based on a points system, "pay as you drive" in which the insured consumes points according to the mode of driving.

In addition, the research also aims to include an analysis of the possible applications of tariff a posteriori, where you set the rules for renewal according to driving behavior indicators and reward or penalize the insured based on the behavior and actions at the helm. In this way, it would replace in part the bonus malus system that, among other things, is losing meaning also for direct reimbursement.

The elaborated practical application start from the analysis of data collected by a company specializing in the provision of telematics services and systems for the insurance and automotive market, and able to record and process statistical information on the driving habits of motorists through the installation the black box.

Also the insurance process beginning from rate making to the management of risks in the portfolio was analyzed. In this scope models were studied useful in two basic steps of risk management:

• monitoring of risks in the portfolio;

• quantification of risks in terms of capital to be allocated in Solvency II.

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