Customer default and prepayment: Incorporating macroeconomic conditions

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Consumer banks operating in transitional economies are exposed to greater risks in terms of default and/or prepayment of obligations by their customers. In order to protect themselves against these risks, a strong reserving policy is required. Insofar as customer-level credit scoring has been considered, few studies have incorporated the effect of macroeconomic conditions, which can be a crucial factor in transitional economies.

In this paper, the link between credit scoring and macroeconomic conditions is studied. More specifically, time-to-event analysis is used to model a customer's default and prepayment behaviour. The model considers both customer-specific variables and macroeconomic variables.

In this study, a portfolio from a Central- and Eastern European study is used. As this is an economy in transition, the economic conditions change rapidly. In the first part of this paper, a careful study is provided of which macroeconomic variables should be considered into the analysis. More specifically, variables such as the country's GDP growth, consumer confidence index, unemployment rate, the stock price index, consumption growth rate, etc. are proposed. The econometric methodology follows a Cox Proportional Hazard model in which these macroeconomic factors are introduced.

In a next step, the Value-at-Risk is computed for the portfolio using a Monte Carlo simulation. This paper will use the probability of default estimates of the proportional hazard model. While quite some papers use a structural model using Merton's approach

to model the value-at-risk of a portfolio considering credit risk for consumer loans, little work has been done using a reduced form approach.