Title: SEMI-MARKOV CREDIT RISK MODELLING FOR A PORTFOLIO OF CONSUMER LOANS: KENYAN BANKING INDUSTRY

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ABSTRACT

Based on simulations of implied values for credit worthiness over a period of 5 years for 1000 consumers, we establish a case for the Semi-Markov models as a proxy for internal credit risk models for a portfolio of consumer loans. With ample calibration, we prove the robustness of the Semi-Markov models in forecasting probabilities of default and loss given default. With a view of credit risk as a reliability problem, we generate credit risk indicators as qualifications of adequacy of a loan portfolio. This informs prospective holding of capital based on forecast delinquencies as opposed to the current retrospective practice that relies on the trigger event of default. We use Monte-Carlo simulation techniques to generate consumer ratings and adopt this to the Merton model to derive the initial probability transition matrix. Initial consumer rating is in accordance with industry practice using a credit score sheet backed by the logit model. The banking credit function could espouse the study results to fulfill regulatory credit risk capital requirements for consumer loans in line with the Central Bank of Kenya Prudential Risk Guidelines or banks in other jurisdictions compliant with the Basel banking framework.