Migration Rates Modeling with Renewal in Open Systems: A Montecarlo Approach

(Article begins on next page)

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Abstract

According to a not so weak analogy with the population dynamics, the credit portfolio of a bank can be conceived as a population which reshapes through time also under the effects of the business cycle forces. Day after day the population sample changes in size and configuration. New borrowers enter (births) the system while being allocated to given classes of credit risk. Persistent borrowers migrate across such classes due to changes in their creditworthiness if classified as performing or possible recovery from default positions. Some of them may also exit the system, either because they have reached the maturity (regular exits) or because the recovery process had been closed. The present paper presents a Montecarlo approach for the simulation of the credit portfolio of a bank as an ~~of~~ open system with renewal and migration. The outcomes are then compared with the standard approach for the estimation of transition matrices which assumes the system to be closed (i.e. the cohort approach) with an absorbing state at default.

Keywords: Rating classes; Credit risk migration models; Montecarlo simulation.