

Expected profit distribution in loan portfolios subject to delinquencies and macroeconomic shocks

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Abstract:

In typical loan portfolios such as mortgages and credit cards, a considerable number of accounts often experience different stages of delinquency before eventually recovering, fully repaying their balance, or defaulting. From the lender perspective, these events, coupled with the state of the economy, can affect cash-flow and profitability significantly.

In this work, we show how to compute the expected outstanding profit distribution dynamically. Our methodology incorporates account level intensity models that explain transitions between different states of delinquency and which include macroeconomic variables as well as a Vector Autoregressive Regression models of the macroeconomy. By using the parameterised VAR, we can predict future states of the macroeconomy and so the effects that this has on the transitions between states of delinquency and so changes in account level cash flows and profitability. We apply this methodology to a portfolio of more than 100 thousands mortgage accounts and show how to compute the expected outstanding profit dynamically.