

# Estimating Transition Matrices :

## An Application to Sovereign Risk

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### Abstract

Credit migration matrices are cardinal inputs to many risk management applications, and these matrices provide a succinct way of describing the evolution of credit ratings. This talk presents three methods to estimate transition matrices, including two methods by using individual data, the cohort approach and the duration approach, and one method by using aggregate proportions data.

We will also show some properties of these estimators, for example, row sum condition, non-negativity condition, consistency, efficiency, and so on. We provide estimating results and their comparisons for both sovereign data and companies data. In case studies, we consider monthly data of more than 8 countries and quarterly data of more than 50 companies. In addition, we discuss the merits of estimators by comparing their performances. Furthermore, we will apply the transition matrices to foreign exchange portfolio, and selecting the best foreign exchange portfolio by transition matrices.

關鍵詞：transition matrices、credit risk、sovereign risk、individual data、proportions data、duration、foreign exchange