Theory and Applications of Universal Time-Consistent Credit Rating

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ABSTRACT

This paper establishes a new theory for creditworthiness and credit rating. It provides a unified framework for analyzing both the real-world credit ratings (such as agency ratings or bank ratings) and theoretical approaches (such as first-hitting defaults or Distance-to-Default model). The paper offers solutions to many common rating problems (such as time consistent or rating mapping). Using agency ratings as examples, it establishes credit ratings that are consistent across time and fully convertible between different rating systems. It also explains connections between creditworthiness, credit rating and regulatory requirements. When applied to first-hitting default model, it reveals deep connections between credit rating, asset volatility and market price of risk.

BIOGRAPHY

Dr. Yimin Yang has over 20 years of experience in financial risk management, including building and heading risk analytics for PNC Financial Services Group and SunTrust Banks. His risk management expertise covers credit risk, investment risk and Anti-money laundering areas. Currently he is the first Senior Director partner at Protiviti Inc., the 6th largest risk management consulting firm in USA, inheriting former Arthur Andersen Consulting. He is responsible for risk management, AI/Machine Learning, and capital management. Dr. Yang holds a Bachelor's degree from Peking University, a Master degree from Chinese and Academy of Sciences, a Master degree in computer networking from Carnegie Mellon University and a Math Ph.D. from University of Chicago. Prior to his financial industry career, he was a tenure-track assistant professor at University of Minnesota-Morris.

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