



Research Paper Number 83

On the Way to Recovery: A Nonparametric Bias Free Estimation of Recovery Rate Densities

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Date:

May 2003

This paper has now been published and is no longer available as a part of our Research Paper Series. The published text can be found with the following reference:

Scaillet, O., Renault, O., "On the Way to Recovery: A Nonparametric Bias Free Estimation of Recovery Rate Densities", in *Journal of Banking and Finance*, vol. 28, 2004, pp.2915-2931.

Abstract:

In this paper we analyse recovery rates on defaulted bonds using the Standard and Poor's/PMD database for the years 1981-1999. Due to the specific nature of the data (observations lie within 0 and 1), we must rely on nonstandard econometric techniques. The recovery rate density is estimated nonparametrically using a beta kernel method. This method is free of boundary bias, and Monte Carlo comparison with competing nonparametric estimators show that the beta kernel density estimator is particularly well suited for density estimation on the unit interval. We challenge the usual market practice to model parametrically recovery rates using a beta distribution calibrated on the empirical mean and variance. This assumption is unable to replicate multimodal distributions or concentration of data at total recovery and total loss. We evaluate the impact of choosing the beta distribution on the estimation of credit Value-at-Risk.