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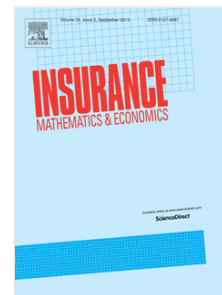
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# The Loss Given Default of a Low-Default Portfolio with Weak Contagion

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## Abstract

In this paper we study the loss given default (LGD) of a low default portfolio (LDP), assuming that there is weak credit contagion among the obligors. We characterize the credit contagion by a Sarmanov dependence structure of the risk factors that drive the obligors' default, where the risk factors are assumed to be heavy tailed. From a new perspective of asymptotic analysis, we derive a limiting distribution for the LGD. As a consequence, an approximation for the entire distribution, in contrast to just the tail behavior, of the LGD is obtained. We show numerical examples to demonstrate the limiting distribution. We also discuss possible applications of the limiting distribution to the calculation of moments and the Value at Risk (VaR) of the LGD.

*JEL:* G220; G230

*Keywords:* asymptotic analysis; asymptotic (in)dependence; credit contagion; default probability; loss given default; low-default portfolio; risk measure; Sarmanov distribution.

## 1 Introduction

The Losses Given Default (LGD) of credit portfolios have been extensively studied in the banking and finance literature, some most recent studies including Qi and Yang (2009), Qi and Zhao (2011), Frye and Jacobs Jr. (2012), Gürler and Hibbeln (2013), and Masdemont and Ortiz-Gracia (2014), to name a few. A reason for this is that banking regulations such as Basel II and the phasing-in Basel III require banks to hold risk capital for their credit portfolios (e.g., investments on corporate bonds or mortgage loans), and the calculation of the risk capital under the (advanced) Internal Ratings-Based method relies on knowledge

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