Advancing Loss Given Default Prediction Models:
How the Quiet Have Quickened

Greg M. Gupton

PDF

Abstract

We describe LossCalc™ version 2.0: the Moody's KMV model to predict loss given default (LGD), the equivalent of (1 − recovery rate). LossCalc is a statistical model that applies multiple predictive factors at different information levels: collateral, instrument, firm, industry, country and the macroeconomy to predict LGD. We find that distance-to-default measures (from the Moody's KMV structural model of default likelihood) compiled at both the industry and firm levels are predictive of LGD. We find that recovery rates worldwide are predictable within a common statistical framework, which suggests that the estimation of economic firm value (which is then available to allocate to claimants according to each country's bankruptcy laws) is a dominant step in LGD determination. LossCalc is built on a global dataset of 3,026 recovery observations for loans, bonds and preferred stock from 1981 to 2004. This dataset includes 1,424 defaults of both public and private firms – both rated and unrated instruments – in all industries. We demonstrate out-of-sample and out-of-time LGD model validation. The model significantly improves on the use of historical recovery averages to predict LGD.

E. I. Altman– A. Gande– A. Saunders 2004, "Informational Efficiency of Loans Versus Bonds: Evidence from Secondary Market Prices", Working Paper, New York University and Vanderbilt University.

Google Scholar ↗

F. Bartlett 1999, "Regimes, Recoveries and Loan Ratings: The Importance of Insolvency Legislation", Working Paper, Fitch/IBCA – Loan Products.

Google Scholar ↗

Basel Committee on Banking Supervision 2001, "The New Basel Capital Accord", Working Paper, Bank for International Settlements.

Google Scholar ↗

S. Borenstein– N. L. Rose 1995, "Do Airlines in Chapter 11 Harm Their Rivals?: Bankruptcy and Pricing Behavior in U.S. Airline Markets", Working Paper, National Bureau of Economic Research.

Google Scholar ↗

P. J. Crosbie– J. R. Bohn 2003, "Modeling Default Risk", Working Paper, Moody's KMV.

Google Scholar ↗

S. A. Davydenko– J. R. Franks 2004, "Do Bankruptcy Codes Matter? A Study of Defaults in France, Germany, and the UK", Working Paper, London Business School.

Google Scholar ↗

V. Dhar– R. Stein 1998, "Finding Robust and Usable Models with Data Mining: Examples from Finance", *PCAI* , **19**(5), pp. 17–23.

Google Scholar ↗

A. C. Eberhart– R. J. Sweeney 1992, "Does the Bond Market Predict Bankruptcy Settlements?" *Journal of Finance,*

B. Fitzenberger– R. Koenker– J. A. F. Machado 2002, *Economic Applications of Quantile Regression*, New York: Physica-Verlag Heidelberg.

Google Scholar ↗

M. Gordy– D. Jones 2002, "Capital Allocation for Securitizations with Uncertainty in Loss Prioritization", Working Paper, Federal Reserve Board.

Google Scholar ↗

R. Guha 2002, "Recovery of Face Value at Default: Theory and Empirical Evidence", Working Paper, London Business School.

Google Scholar ↗

G. M. Gupton– R. M. Stein 2002, "LossCalc™: Model for Predicting Loss Given Default (LGD)", Moody's Investors Service.

Google Scholar ↗

D. T. Hamilton 1999, "Debt Recoveries for Corporate Bankruptcies", Moody's Investors Service.

Google Scholar ↗

D. T. Hamilton– A. Berthault 2000, "The Investment Performance of Bankrupt Corporate Debt Obligations: Moody's Bankrupt Bond Index 2000", Moody's Investors Service.

Google Scholar ↗

D. T. Hamilton– G. M. Gupton– A. Berhault 2001, "Default and Recovery Rates of Corporate Bond Issuers: 2000", Moody's Risk Management.

Google Scholar ↗

J. J. Heckman 1979, "Sample Bias as a Specification Error", *Econometrica*, **47**(1), pp. 153–61.

I. Izvorski 1997, "Recovery Ratios and Survival Times for Corporate Bonds", Working Paper, IMF, Washington DC.

Google Scholar

S. D. Longhofer– C. T. Carlstrom 1995, "Absolute Priority Rule Violations in Bankruptcy", *Economic Review*, **31**(4), pp. 21–30.

Google Scholar

R. J. Mann 1997, "Explaining the Patterns of Secured Credit", *Harvard Law Review*, **110**(3), pp. 625–83.

Web of Science® | Google Scholar

Y. M. Mensah 1984, "An Examination of the Stationarity of Multivariate Bankruptcy Prediction Models: A Methodological Study", *Journal of Accounting Research*, **22**(1), pp. 380–95.

Web of Science® | Google Scholar

M. Onorota– E. I. Altman 2003, "An Integrated Pricing Model for Defaultable Loans and Bonds", Working Paper, City University London and New York University.

Google Scholar

M. H. Pesaran– T. Schuermann– B. J. Treutler– S. M. Weiner 2004, "Macroeconomic Dynamics and Credit Risk: A Global Perspective", Working Paper, University of Cambridge.

Google Scholar

M. Schmit– J. Stuyck 2002, "Recovery Rates in the Leasing Industry", Working Paper, Leaseurope.

Google Scholar

P. J. Schönbucher 2003, *Credit Derivatives Pricing Models*, New York: John Wiley & Sons.

J. Sobehart– S. Keenan– R. Stein 2000a, "Validation Methodologies for Default Risk Models", *Credit*, **1**(4), pp. 51–6.

[Google Scholar ⧉]

J. R. Sobehart– S. C. Keenan– R. M. Stein 2000b, "Benchmarking Quantitative Default Risk Models: A Validation Methodology", Moody's Risk Management.

[Google Scholar ⧉]

P. Stumpp– T. Marshela– M. Mulvaney– M. Hilderman 1997, "A Sense of Security: Moody's Approach to Evaluating Bank Loan Structure and Collateral", Moody's Investors Service.

[Google Scholar ⧉]

D. Tasche 2004, "The Single Risk Factor Approach to Capital Charges in Case of Correlated Loss Given Default Rates", Working Paper, Bundesbank.

[Google Scholar ⧉]

H. S. Wagner III 1996, "The Pricing of Bonds in Bankruptcy and Financial Restructuring", *The Journal of Fixed Income*, June, pp. 40–7.

[Google Scholar ⧉]

D. J. Ward– G. L. Griepentrog 1993, "Risk and Return in Defaulted Bonds", *Financial Analysts Journal*, May/June, pp. 61–5.

[Web of Science® ⧉] | [Google Scholar ⧉]

M. West– E. De Bodard 2000a, "Bankruptcy and Ratings: A Leveraged Finance Approach for Europe", Moody's Investors Service.

[Google Scholar ⧉]

P. Xu 2004, "Bankruptcy Resolution in Japan: Corporate Reorganization vs. Civil Rehabilitation", Working Paper, University and RIETI.

Google Scholar ↗

Citing Literature ⌄

Download PDF