

Combining Bond Rating Forecasts Using Logit

Mark Kamstra , Peter Kennedy, Teck-Kin Suan

First published: 09 March 2005

<https://doi.org/10.1111/j.1540-6288.2001.tb00011.x>

We thank Lisa Kramer and R. Glen Donaldson for helpful comments and the Social Sciences and Humanities Research Council of Canada for financial support.



Abstract

Companies sometimes use statistical analysis to anticipate their bond ratings or a change in the rating. However, different statistical models can yield different ratings forecasts, and there is no clear rule for which model is preferable. We use several forecasting methods to predict bond ratings in the transportation and industrial sectors listed by Moody's bond rating service. A variant of the ordered-logit regression-combining method of Kamstra and Kennedy 1998 yields statistically significant, quantitatively meaningful improvements over its competitors, with very little computational cost.

References

Bates, J. and C. W. Granger, 1969. The combination of forecasts, *Operational Research Quarterly* 20, 451-468.

[Web of Science®](#) | [Google Scholar](#)

Belkaoui, A., 1980. Industrial bond ratings: A new look, *Financial Management* 9, 44-51.

[Web of Science®](#) | [Google Scholar](#)

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

[Web of Science®](#) | [Google Scholar](#)

Brier, G., 1950. Verification of forecasts expressed in terms of probability. *Monthly Weather Review* 78, 1-3.

[Google Scholar](#)

Bunn, D., 1975. A Bayesian approach to linear combination of forecasts, *Operational Research Quarterly* 26, 325-329.

[Web of Science®](#) | [Google Scholar](#)

Bunn, D., 1981. Two methodologies for the linear combination of forecasts, *Journal of the Operational Research Society* 32, 213-222.

[Web of Science®](#) | [Google Scholar](#)

Clemen, R. T., 1986. Linear constraints and the efficiency of combined forecasts. *Journal of Forecasting* 5, 31-38.

[Web of Science®](#) | [Google Scholar](#)

Clemen, R. T., 1989. Combining forecasts: A review and annotated bibliography, *International Journal of Forecasting* 5, 559-583.

[Web of Science®](#) | [Google Scholar](#)

Clemen, R. T. and R. L. Winkler, 1986. Combining economic forecasts, *Journal of Business and Economic Statistics* 4, 39-46.

[Web of Science®](#) | [Google Scholar](#)

Datta, S., M. Iskandar-Datta, and A. Patel, 1997. The pricing of initial public offers of corporate straight debt, *Journal of Finance* 52, 379-96.

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

Donaldson, R. G. and M. Kamstra, 1999. Neural network forecast combining with interaction effects, *Journal of Franklin Institute* 336, 227–236.

[Web of Science®](#) | [Google Scholar](#)

Ederington, L. H., 1985. Classification models and bond ratings. *The Financial Review* 20, 237–261.

[Google Scholar](#)

Feather, P. M. and M. S. Kaylen, 1989. Conditional qualitative forecasting, *American Journal of Agricultural Economics* 71, 195–201.

[Web of Science®](#) | [Google Scholar](#)

Fan, D. K., K.-N. Lau, and P.-L. Leung, 1996. Combining ordinal forecasts with an application in a financial market, *Journal of Forecasting* 15, 37–48.

[Web of Science®](#) | [Google Scholar](#)

Followill, R. A. and T. Martell, 1997. Bond review and rating change announcements: An examination of informational value and market efficiency, *Journal of Economics and Finance* 21, 75–82.

[Google Scholar](#)

Fox, J., 1984. *Linear Statistical Models and Related Methods* (Wiley, New York, NY).

[Google Scholar](#)

Gastwirth, J. L. and H. Rubin, 1971. The behavior of robust estimators on dependent data, Purdue University Statistics Mimeo 197.

[Google Scholar](#)

Gentry, J. A., D. T. Whitford, and P. Newbold, 1988. Predicting industrial bond ratings with a probit model and

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

Granger, C. W., 1989. Invited review: Combining forecasts-twenty years later, *Journal of Forecasting* 8, 167-173.

[Web of Science®](#) | [Google Scholar](#)

Granger, C. W. and R. Ramanathan, 1984. Improved methods of combining forecasts, *Journal of Forecasting* 3, 197-204.

[Web of Science®](#) | [Google Scholar](#)

Greene, W. H., 1993. *Econometric Analysis* (Prentice Hall, Englewood Cliffs , NJ).

[Google Scholar](#)

Gunter, S. I. and C. Aksu, 1989. N-Step combinations of forecasts, *Journal of Forecasting* 8, 253-267.

[Web of Science®](#) | [Google Scholar](#)

Hand, J. R. M., R. W. Holthausen, and R. W. Leftwich, 1992. The effect of bond rating agency announcements on bond and stock prices, *Journal of Finance* 47, 733-752.

[Web of Science®](#) | [Google Scholar](#)

Harrald, P. and M. Kamstra, 1997. Evolving artificial neural networks to combine financial forecasts, *IEEE Transactions on Evolutionary Computation* 1, 40-52.

[Google Scholar](#)

Hallman, J. and M. Kamstra, 1989. Combining algorithms based on robust estimation techniques and co-integrating restrictions, *Journal of Forecasting* 8, 189-198.

[Web of Science®](#) | [Google Scholar](#)

Impson, C. M., I. Karafiath, and I. I. Glasscock, 1992. Testing beta stationarity across bond rating changes. *The*

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

Kaplan, R. S. and G. Urwitz, 1979. Statistical models of bond ratings: A methodological inquiry. *Journal of Business* 52, 231–261.

[Web of Science®](#) | [Google Scholar](#)

Kao, C. and C. Wu, 1990. Two-step estimation of linear models with ordinal unobserved variables: The case of corporate bonds, *Journal of Business and Economic Statistics* 8, 317–325.

[Web of Science®](#) | [Google Scholar](#)

Lachenbruch, P. A. and M. R. Mickey, 1968. Estimation of error rates in discriminant analysis, *Technometrics* 10, 1–11.

[Web of Science®](#) | [Google Scholar](#)

Lehmann, E. L., 1975. *Non-Parametrics* (Holden-Day, San Francisco , CA).

[Google Scholar](#)

Mahmoud, E., 1984. Accuracy in forecasting: A survey, *Journal of Forecasting* 3, 139–159.

[Web of Science®](#) | [Google Scholar](#)

Makridakis, S. and R. L. Winkler, 1983. Averages of forecasts: Some empirical results, *Management Science* 29, 987–996.

[Web of Science®](#) | [Google Scholar](#)

Moody's Investors Service, Inc., 1988-1993. *Moody's Transportation Manual* (Moody's Investors Service, Inc.: New York , NY).

[Google Scholar](#)

Moody's Investors Service, Inc., 1993. *Moody's Industrial Manual* (Moody's Investors Service, Inc.: New York

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

Moon, C. G. and J. G. Stotsky, 1993b. Testing the difference between the determinants of Moody's and Standard's and Poor's ratings, *Journal of Applied Econometrics* 8, 51-69.

[Web of Science®](#) | [Google Scholar](#)

Newbold, P. and C. W. Granger, 1974. Experience with forecasting univariate time series and the combination of forecasts, *Journal of Royal Statistical Society: Series A* 137, 131-149.

[Web of Science®](#) | [Google Scholar](#)

O'Neal, E. S., 1998. Why electric utility stocks are sensitive to interest rates, *The Financial Review* 33, 147-61.

[Google Scholar](#)

Pinches, G. E. and K. A. Mingo, 1973. A multivariate analysis of industrial bond ratings, *Journal of Finance* 28, 1-17.

[Web of Science®](#) | [Google Scholar](#)

Pogue, T. F. and R. M. Soldofsky, 1969. What's in a bond rating, *Journal of Financial and Quantitative Analysis* 4, 201-228.

[Web of Science®](#) | [Google Scholar](#)

Reiter, S. A. and D. A. Ziebart, 1991. Bond yields, ratings and financial information: Evidence from public utility issues, *The Financial Review* 26, 45-73.

[Google Scholar](#)

Sanders, F., 1963. Subjective probability forecasting, *Journal of Applied Meteorology* 2, 191-201.

[Google Scholar](#)

Staël von Holstein, C.-A. S., 1971. An experiment in probabilistic weather forecasting, *Journal of Applied*

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

Terza, J. V., 1985. Ordinal probit: A generalization, *Communications in Statistics, Theory and Methods* 14, 1-12.

[Web of Science®](#) | [Google Scholar](#)

Trenkler, G. and E. P. Linski, 1986. Note: Linear constraints and the efficiency of combined forecasts, *Journal of Forecasting* 5, 197-202.

[Web of Science®](#) | [Google Scholar](#)

U.S. Bureau of the Census, 1993. *Statistical Abstract of the United States* 113th ed. (U.S. Bureau of the Census: Washington , DC).

[Google Scholar](#)

Winkler, R. L. and S. Makridakis, 1983. The combination of forecasts, *Journal of Royal Statistical Society: Series A* 146, 150-157.

[Web of Science®](#) | [Google Scholar](#)

Winkler, R. L., A. Murphy, and R. Katz, 1977. The consensus of selective probability forecasts: Are two, three, ... heads better than one?, In Preprint Volume Fifth Conference on Probability and Statistics, 57-62.

[Google Scholar](#)

Citing Literature



[Download PDF](#)

ABOUT WILEY ONLINE LIBRARY

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)



Manage Preferences

Accept All

Reject Non-Essential

Contact Us
Training and Support
DMCA & Reporting Piracy
Sitemap

OPPORTUNITIES

Subscription Agents
Advertisers & Corporate Partners

CONNECT WITH WILEY

The Wiley Network
Wiley Press Room

Copyright © 1999-2026 John Wiley & Sons, Inc or related companies. All rights reserved, including rights for text and data mining and training of artificial intelligence technologies or similar technologies.

WILEY

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)



Manage Preferences

Accept All

Reject Non-Essential