

Artificial Neural Network Models for Pricing Initial Public Offerings

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Abstract

In recent times, managerial applications of neural networks, especially in the area of financial services, has received considerable attention. In this paper, neural network models are developed for a new application: the pricing of Initial Public Offerings (IPOs). Previous empirical studies provide consistent evidence of considerable inefficiency in the pricing of new issues. Neural network models using publicly available financial data as inputs are developed to price IPOs. The pricing performance and the economic benefits of the neural network models are evaluated. Significant economic gains are documented with neural networks. Several tests to establish generalizability and robustness of the results are conducted.

References

[1] Beatty, R., & Ritter, J.R. Investment banking reputation and the underpricing of initial public offerings. *Journal of Financial Economics*, 1986, 1, 213–232.

[Google Scholar](#)

[2] Carter, R.B., & Manaster, S. Initial public offerings and underwriter reputation. *Journal of Finance*, 1990, 45, 1045–1067.

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

[3] Collins, E., Ghosh, S., & Scofield, C. An application of a multiple neural network learning system to emulation of mortgage underwriting judgements. *Proceedings of the IEEE International Conference on Neural Networks*, 1988, 2, 459–466.

[Google Scholar](#)

[4] Dutta, S., & Shekhar, S. Bond-rating: A non-conservative application of neural networks. In *Proceedings of the IEEE International Conference on Neural Networks*, 1988, 2, 443–450.

[Google Scholar](#)

[5] Fletcher, D., & Goss, E. Forecasting with neural networks: An application using bankruptcy data. *Information and Management*, 1993, 24, 159–167.

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

[6] *Going Public: The IPO Reporter*. Philadelphia , PA : Howard & Co.

[Google Scholar](#)

[7] Hecht-Nielsen, R. *Neurocomputing*. Reading , MA : Addison-Wesley, 1989.

[Google Scholar](#)

[8] Hutchinson, J.M., Lo, A.W., & Poggio, T. A nonparametric approach to pricing and hedging derivative securities via learning networks. *Journal of Finance*, 1994, 49, 851–889.

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

[9] Ibbotson, R.G. Price performance of common stock new issues. *Journal of Finance*, 1975, 2, 235–272.

[Google Scholar](#)

[10] Ibbotson, R.G., Sindelar, J.L., & Ritter, J.R. Initial public offerings. *Journal of Applied Corporate Finance*, 1988, 1, 37–45.

[Google Scholar](#)

[11] Ibbotson, R.G., & Ritter, J.R. Initial public offerings. *North Holland Handbook of Operations Research and Management Science: Finance*, 1994.

[Google Scholar](#)

[12] Jain, B. The underpricing of ‘Unit’ initial public offerings. *Quarterly Review of Economics and Finance*, 1994, 3, 309–332.

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

[13] James, C. Relationship specific assets and the pricing of underwriter services. *Journal of Finance*, 1992, **47**, 1865–1885.

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

[14] Kamijo, K., & Tanigawa, T. Stock price pattern recognition: A recurrent neural network approach. *Proceedings of the International Joint Conference on Neural Networks*, 1992, **1**, 215–221.

[Google Scholar](#)

[15] Klimasauskas, C.C. *Neural Works™: An introduction to neural computing*. Sewickley, PA : NeuralWare, Inc, 1988.

[Google Scholar](#)

[16] Lipman, F.D. *Going public*. Rocklin, CA : Prima Publishing, 1993.

[Google Scholar](#)

[17] Minsky, M., & Papert, S. *Perceptrons*. Cambridge, MA : MIT Press, 1969.

[Google Scholar](#)

[18] Muscarella, C.J., & Vetsuypens, M.R. Firm age, uncertainty and IPO underpricing: Some new empirical evidence. Southern Methodist University Working Paper, 1990.

[Google Scholar](#)

[19] Ritter, J.R. The 'Hot Issue' market of 1980. *Journal of Business*, 1984, **32**, 215–240.

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

[20] Ritter, J.R. The costs of going public. *Journal of Financial Economics*, 1987, **19**, 269–281.

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

[21] Rosenblatt, F. The perceptron: A probabilistic model for information storage and organization in the brain. *Psychological Review*, 1958, **65**, 386–408.

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

[22] Rumelhart, D.E., Hinton, G.E., & Williams, R.J. Learning internal representations by error propagation. In D.E. Rumelhart & J.L. McClelland (Eds.), *Parallel distributed processing*. Cambridge, MA : MIT Press, 1986, 318–362.

[Google Scholar](#)

[23] Salchenberger, L.M., Cinar, E.M., & Lash, N.A. Neural networks: A new tool for predicting thrift failures. *Decision Sciences*, 1992, **23**, 899–916.

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

[24] Spiro, L.N., Schroeder, M., & Zweig, P.L. Beware the IPO market. *Business Week*, April 4, 1994, 84–90.

[Google Scholar](#)

[25] Tam, K.Y., & Kiang, M.Y. Managerial applications of neural networks: The case of bank failure predictions. *Management Science*, 1992, **38**(7), 926–947.

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

[26] Wang, D. Pattern recognition: Neural networks in perspective. *IEEE Expert*, August 1993, 52–60.

[Google Scholar](#)

[27] Yoon, Y., Swales, G., & Margavio, T.M. A comparison of discriminant analysis versus artificial neural networks. *Journal of Operational Research Society*, 1993, **44**, 51–60.

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