

Jasiulewicz, Helena; Kordecki, Wojciech

Multiplicative parameters and estimators: applications in economics and finance. (English)

Zbl 1347.62225

Ann. Oper. Res. 238, No. 1-2, 299-313 (2016).

Summary: In this paper, we pay our attention to multiplicative parameters of random variables and their estimators. We study multiplicative properties of the multiplicative expectation and multiplicative variation as well as their estimators. For distributions having applications in finance and insurance we provide their multiplicative parameters and their properties. We consider, among others, heavy-tailed distributions such as lognormal and Pareto distributions, applied to the modelling of large losses. We discuss multiplicative models, in which the geometric mean and the geometric standard deviation are more natural than their arithmetic counterparts. We provide two examples from the Warsaw Stock Exchange in 1995–2009 and from a bid of 52-week treasury bills in 1992–2009 in Poland as an illustrative example.

MSC:

62P05 Applications of statistics to actuarial sciences and financial mathematics

62P20 Applications of statistics to economics

Keywords:

geometric mean; geometric variance; lognormal distribution; Pareto distribution; multiplicative estimators

Full Text: [DOI](#)

References:

- [1] Cate, A. (2009). Arithmetic and geometric mean rates and return in discrete time. CPB Memorandum www.scribd.com/doc/28483920/Arithmetic-and-geometric-mean-rates-of-return-in-discrete-time. · Zbl 0364.90111
- [2] Cooper, I. Arithmetic versus geometric Mean estimators: setting discount rates for capital budgeting, *European Financial Management*, 2, 157-167, (1996)
- [3] Hughson, E; Stutzer, M; Yung, C, The misuse of expected returns, *Financial Analysts Journal*, 62, 88-96, (2006)
- [4] Jacquier, E; Kane, A; Marcus, AJ, Geometric or arithmetic Mean: A reconsideration, *Financial Analysts Journal*, 59, 46-53, (2003)
- [5] Jacquier, E; Kane, A; Marcus, AJ, Optimal estimation of the risk premium for the long run and asset allocation: A case of compounded estimation risk, *Journal of Financial Econometrics*, 3, 37-55, (2005)
- [6] Latané, H, Criteria for choice among risky ventures, *The Journal of Political Economy*, 67, 144-155, (1959)
- [7] Missiakoulis, S; Vasiliou, D; Eriotis, N, A requiem for the use of the geometric Mean in evaluating portfolio performance, *Appl Financial Economics Letter*, 3, 403-408, (2007)
- [8] Mitrinović, D. S., Pečarić, J. E., & Fink, A. M. (1993). *Classical and New Inequalities in Analysis*. Dordrecht: Kluwer Academic Publisher.
- [9] Ostasiewicz, S; Ostasiewicz, W, Means and their applications, *Annals of Operations Research*, 97, 337-355, (2000) · Zbl 1043.91015
- [10] Saaty, TL; Vargas, LG, Dispersion of group judgments, *Mathematical and Computer Modelling*, 46, 918-925, (2007) · Zbl 1173.91346
- [11] Thadewald, T., & Büning, H. (2004). Jarque-bera test and its competitors for testing normality: A power comparison. School of Business & Economics Discussion Paper: Economics 2004/9, Berlin, <http://hdl.handle.net/10419/49919>.
- [12] Urzúa, C.M. (1996). On the correct use of omnibus tests for normality. *Economics Letters*, 53, 247-251, (corrigendum, 1997, 54:301) · Zbl 1043.91015
- [13] Weide, JHV; Peterson, DW; Maier, SF, A strategy which maximizes the geometric Mean return on portfolio investments, *Management Science*, 23, 1117-1123, (1977) · Zbl 0364.90111
- [14] Würtz, D., & Katzgraber, H.G. (2005). Precise finite-sample quantiles of the Jarque-Bera adjusted Lagrange multiplier test. [arXiv:math/0509423v1](https://arxiv.org/abs/math/0509423v1) [math.ST].
- [15] Zacharias, N; Sielużycki, C; Kordecki, W; König, R; Heil, P, The M100 component of evoked magnetic fields differs by scaling factors: implications for signal averaging, *Psychophysiology*, 48, 1069-1082, (2011)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.