Moving Averages for Financial Data Smoothing

Conference paper

pp 34–45 | Cite this conference paper

Aistis Raudys, Vaidotas Lenčiauskas & Edmundas Malčius

Abstract

For a long time moving averages has been used for a financial data smoothing. It is one of the first indicators in technical analysis trading. Many traders debated that one moving average is better than other. As a result a lot of moving averages have been created. In this empirical study we overview 19 most popular moving averages, create a taxonomy and compare them using two most important factors

– smoothness and lag. Smoothness indicates how much an indicator change (angle) and lag indicates how much moving average is lagging behind the current price. The aim is to have values as smooth as possible to avoid erroneous trades and with minimal lag – to increase trend detection speed. This large-scale empirical study performed on 1850 real-world time series including stocks, ETF, Forex and futures daily data demonstrate that the best smoothness/lag ratio is achieved by the Exponential Hull Moving Average (with price correction) and Triple Exponential Moving Average (without correction).

Access this chapter

Log in via an institution →

Subscribe and save

✓ Springer+   from €37.37 /Month

- Starting from 10 chapters or articles per month
- Access and download chapters and articles from more than 300k books and 2,500 journals
- Cancel anytime

View plans →

Buy Now

∧ **Chapter** EUR 29.95	∧ **eBook** EUR 42.79
Price includes VAT (Poland)	Price includes VAT (Poland)
• Available as PDF	• Available as PDF
• Read on any device	• Read on any device
• Instant download	• Instant download
• Own it forever	• Own it forever
Buy Chapter →	Buy eBook →

Softcover Book

EUR 53.49
Price includes VAT (Poland)

- Compact, lightweight edition
- Dispatched in 3 to 5 business days
- Free shipping worldwide - see info

Buy Softcover Book →

Tax calculation will be finalised at checkout

Purchases are for personal use only

Institutional subscriptions →

Preview

Unable to display preview. Download preview PDF.

Similar content being viewed by others

Types of Moving Averages

Chapter | © 2017

Why Moving Averages?

Chapter | © 2017

Moving Averages with Reduced Lag Time

Chapter | © 2025

Explore related subjects

Discover the latest articles, books and news in related subjects, suggested using machine learning.

References

1. Hamilton, J.D.: Time series analysis, vol. 2. Princeton University Press, Princeton (1994)

Google Scholar

2. Tan, Z., Quek, C., Cheng, P.Y.K.: Stock trading with cycles: A financial application of ANFIS and reinforcement learning. Expert Systems with Applications 38(5) (2011)

Google Scholar

3. Perry, J.: Kaufman, New Trading Systems and Methods, 4th edn. John Wiley & Sons (2005)

Google Scholar

4. Ni, Y.-S., Lee, J.-T., Liao, Y.-C.: Do variable length moving average trading rules matter during a financial crisis period? Applied Economics Letters (2012)

Google Scholar

5. Marques, N.C., Gomes, C.: Maximus-AI: Using Elman Neural Networks for Implementing a SLMR Trading Strategy. In: Bi, Y., Williams, M.-A. (eds.) KSEM 2010. LNCS, vol. 6291, pp. 579–584. Springer, Heidelberg (2010)

Chapter **Google Scholar**

6. Ruseckas, J., Gontis, V., Kaulakys, B.: Nonextensive Statistical Mechanics Distributions And Dynamics of Financial Observables From The Nonlinear

Stochastic Differential Equations. Advances in Complex Systems 15(suppl. 1) (2012)

7. Jurgutis, A., Simutis, R.: An investor risk profiling using fuzzy logic-based approach in multi-agents decision support system. In: Proceedings of the 17th International Conference on Information and Software Technologies, Kaunas (2011)

8. John, E.: Cybernetic Analysis for Stocks and Futures, pp. 213–227. John Wiley & Sons (2004)

9. John, E.: Rocket Science for Traders, 245 pages. John Wiley & Sons (2001)

10. Kirkpatrick, C.D., Dahlquist, J.R.: The Complete Resource for Financial Market Technicians, pp. 39–50. Financial Times Press (2006)

11. Tillson, T.: Smoothing Techniques For More Accurate Signals. Stocks & Commodities 16, 33–37 (1998)

12. Hull, A.: Hull moving average, http://www.justdata.com.au/Journals/AlanHull/hull_ma.htm

13. John, E.: Cybernetic Analysis for Stocks and Futures, pp. 213–227. John Wiley

& Sons (2004)

<div align="right">**Google Scholar**</div>

14. John, E.: Rocket Science for Traders. John Wiley & Sons (2001)

<div align="right">**Google Scholar**</div>

15. Person, P.-O., Strang, G.: Smoothing by Sawitzky-Golay and Legendre filters, http://persson.berkeley.edu/pub/persson03smoothing.pdf

16. Ellis, C.A., Parbery, S.A.: Is smarter better? A comparison of adaptive, and simple moving average trading strategies. Research in International Business and Finance 19(3), 399–411 (2005)

<div align="right">**Article**   **Google Scholar**</div>

17. Skurichina, M.: Effect of the kernel functional form on the quality of nonparametic Parzen window classifier. In: Raudys, S. (ed.) Statistical Problems of Control, vol. 93, pp. 167–181. Institute Mathematics and Informatics, Vilnius (1991) (in Russian)

<div align="right">**Google Scholar**</div>

Author information

Authors and Affiliations

Faculty of Mathematics and Informatics, Vilnius University, Naugarduko st. 24, LT-03225, Vilnius, Lithuania

Aistis Raudys, Vaidotas Lenčiauskas & Edmundas Malčius

Editor information

Editors and Affiliations

Kaunas University of Technology, Studentu g. 50-313a, 51368, Kaunas, Lithuania

Tomas Skersys

Centre of Information Systems Design Technologies, Kaunas University of Technology, Studentu st. 50-313a, 51368, Kaunas, Lithuania

Rimantas Butleris

Kaunas University of Technology, Studentu g. 50-309a, 51368, Kaunas, Lithuania

Rita Butkiene

Rights and permissions

[Reprints and permissions](#)

Copyright information

About this paper

Cite this paper

.RIS⤓   .ENW⤓   .BIB⤓

Computer Science

Keywords

moving average   smoothing   filer   time series   smoothness   lag   hull   exponential

TRIX

Publish with us

Policies and ethics ⬈

Search

Search by keyword or author

🔍

Navigation

Find a journal

Publish with us

Track your research