

Scientific paper writing project

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Research parameters

Literature Review

Methodological Step

Full proposed abstract

Possible journals

References

Acknowledgments

Questions, criticisms, and suggestions: My contacts

Combining time series analysis with sentiment analysis, we used the following criteria for our research:

- ▶ Refined KeyWords \Rightarrow “Sentiment Analysis”, “Time Series”, “Volatility”, “Structural Breaks”, “Commodity Prices”, “Portfolio Optimization”, “Agricultural Markets”
- ▶ Scientific Databases \Rightarrow See the available at the [“rcrossref“ R package](#) and platforms like “Scopus”, “Web of Science”, and “Google Scholar”
- ▶ Time Range \Rightarrow 10 years of data for agricultural commodity prices and sentiment analysis (news without any kind of social media data)
- ▶ Papers relevance \Rightarrow Papers that focus on the application of econometric models like GARCH, structural break models, sentiment analysis techniques (NLP), and multi-objective portfolio optimization

\Rightarrow Advisor (Prof. Dr. Gilberto Reynoso-Meza) ok ... [PIBIC e PIBITI Jr. editais da PUCPR](#)

We are seeking the following objective:

- ▶ Investigate the impact of sentiment analysis, derived from news sources and financial reports, on the volatility and structural breaks in agricultural commodity prices, and how these insights can improve portfolio optimization strategies.

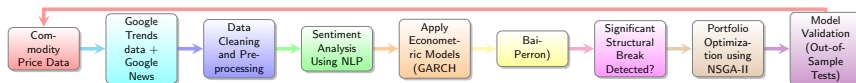
To address the following research question:

- ▶ How does market sentiment, extracted from financial reports and news articles, influence the volatility and structural breaks in agricultural commodity prices, and how can these insights be leveraged to optimize investment portfolios?

Table: Summary of Articles on Time Series and Sentiment Analysis

1. Article Citation	2. Citescore	3. Introduction and Objectives (summary)	4. Methodology (summary)
Zhang, D., Chen, S., Liwen, L., & Xia, Q. (2020)	6.3	Model selection in commodity price forecasting	HAR models, GARCH, structural break analysis
Degiannakis, S., Filis, G., Klein, T., & Walther, T. (2019)	5.9	Volatility forecasting of agricultural commodities	Econometric models with structural breaks
McFarlane, I. (2016)	4.7	Co-integration of agricultural commodity prices	Time series models, co-integration analysis
Wang, J., Wang, Z., Li, X., & Zhou, H. (2019)	6.5	Bee colony optimization in forecasting commodity prices	Machine learning models combined with time series data
Li, J., Li, G., Liu, M., Zhu, X., & Wei, L. (2020)	5.4	Predicting Chinese soybean futures with sentiment analysis	Sentiment analysis applied to news articles
Wu, J., Murphy, F., Garvey, J., & Ma, W. (2015)	6.0	Impact of investor sentiment on agricultural commodities	Sentiment metrics integrated with price volatility analysis
Balcilar, M., Bekun, F. V., & Gupta, R. (2020)	5.8	Global and local uncertainties on oil returns with sentiment	Bayesian VAR models with sentiment analysis
Li, H., Cui, Y., Wang, S., Liu, J., Qin, J., & Yang, Y. (2020)	6.1	Multivariate financial time series forecasting	Variational autoencoders, machine learning for time series
Tomek, W. G., & Myers, R. J. (1993)	4.9	Empirical analysis of agricultural commodity prices	Time series models for agricultural price volatility
Aslan, S., Yozgatligil, C., & Iyigun, C. (2016)	5.5	Clustering of time series using threshold autoregressive models	TAR models, non-linear time series clustering
Freebairn, J. (1994)	5.0	Volatility of agricultural commodity prices	Econometric techniques for agricultural price volatility
Reboredo, J. C. (2012)	5.6	Modelling oil price and exchange rate co-movements	Time series econometrics, co-movement models
Ribeiro, M. T., & Coelho, L. S. (2020)	6.0	Forecasting agricultural prices with ensemble learning	Ensemble learning applied to commodity price forecasting

- ▶ Another kind of application of structural breaks in financial time series analysis script tutorial
- ▶ Scientific Initiation at PUCPR Program for rookie (future) researchers (our project are at the beginning step, see our [Colab Notebook here](#))
- ▶ For GARCH and the News Impact Curve theory (Robert Engle's econometric Nobel prize)



This study explores the impact of sentiment analysis on the volatility and structural breaks in agricultural commodity prices. Agricultural markets are often subject to abrupt fluctuations and high volatility, making it essential for investors and policymakers to understand the factors driving these changes. Sentiment analysis, derived from news sources and social media, offers an additional layer of data that complements traditional econometric models, providing a broader understanding of market behavior. This research will utilize time series data of agricultural commodity prices and sentiment metrics obtained through natural language processing (NLP) tools applied to news data.

The proposed methods include the application of econometric models such as conditional volatility analysis (GARCH) and structural break models (e.g., the Bai-Perron model) to capture the effects of market sentiment on price fluctuations. Additionally, a multi-objective optimization model will be used to adjust agricultural commodity portfolios, accounting for the sentiment-driven volatility impact. Expected results include identifying a significant relationship between market sentiment and price variations, as well as validating an optimized approach to managing commodity portfolios, based on both sentiment data and volatility patterns.

This study will provide valuable insights for portfolio managers and investors, enabling them to incorporate sentiment indicators into their investment strategies and improve the forecasting of commodity market fluctuations. The relevance of this research lies in the growing need to understand how qualitative variables, such as market sentiment, affect agricultural commodity prices in the context of global economic uncertainties.

KeyWords: Sentiment Analysis, Time Series, Volatility, Structural Breaks, Portfolio Optimization, Commodity Prices.

Periodic Paper Submission tip

► ⇒ Overleaf collaborative written paper ...

The screenshot displays the Overleaf collaborative writing environment. On the left, a sidebar lists the document structure: File outline, Introduction, Literature Review, and Methodology. The main editor area shows the LaTeX source code for the literature review section, with line numbers 61 to 73. The right sidebar shows the compiled PDF preview of the paper, titled 'Impact of Sentiment Analysis on the Volatility and Structural Breaks in Agricultural Commodity Prices' by Rodrigo Hermant Oton, Ricardo Vianna. The PDF preview shows the title, authors, abstract, and the start of the introduction section.

You can use the following templates as example here

Periodic Paper Submission tip

The screenshot displays the IEEE Conference Template 1.0 editor. The left pane shows the LaTeX source code, and the right pane shows the rendered conference paper template.

Left Pane (Source Code):

```
1 \documentclass[conference]{IEEEtran}
2 \IEEEoverridecommandlockouts
3 % The preceding line is only needed to identify funding in the first footnote. If
  that is unneeded, please comment it out.
4 \usepackage{cite}
5 \usepackage{amsmath,amssymb,amsfonts}
6 \usepackage{algorithmic}
7 \usepackage{graphics}
8 \usepackage{textcomp}
9 \usepackage{xcolor}
10 \def\BibTeX{{(f)r B\kern-.05em{sc}\kern-.025em b)\kern-.08em
11 T\kern-.1667em\lower.7ex\hbox{e}}\kern-.125emX}}
12 \begin{document}
13
14 \title{Conference Paper Title*}
15 \footnotesize\textsuperscript{*}Note: Sub-titles are not captured in Xplore and
16 should not be used
17 \thanks{Identify applicable funding agency here. If none, delete this.}
18
19 \author{\IEEEauthorblock[1]{\textsuperscript{st} Given Name Surname}
20 \IEEEauthorblock[2]{\textit{dept. name of organization (of Aff.)} \\
21 \textit{name of organization (of Aff.)} \\
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34 \textit{City, Country} \\
35 \textit{email address or ORCID}}
36 \end{document}
```

Right Pane (Rendered Template):

Conference Paper Title*

*Note: Sub-titles are not captured in Xplore and should not be used

1st Given Name Surname <i>dept. name of organization (of Aff.)</i> <i>name of organization (of Aff.)</i> <i>City, Country</i> <i>email address or ORCID</i>	2nd Given Name Surname <i>dept. name of organization (of Aff.)</i> <i>name of organization (of Aff.)</i> <i>City, Country</i> <i>email address or ORCID</i>	3rd Given Name Surname <i>dept. name of organization (of Aff.)</i> <i>name of organization (of Aff.)</i> <i>City, Country</i> <i>email address or ORCID</i>
4th Given Name Surname <i>dept. name of organization (of Aff.)</i> <i>name of organization (of Aff.)</i> <i>City, Country</i> <i>email address or ORCID</i>	5th Given Name Surname <i>dept. name of organization (of Aff.)</i> <i>name of organization (of Aff.)</i> <i>City, Country</i> <i>email address or ORCID</i>	6th Given Name Surname <i>dept. name of organization (of Aff.)</i> <i>name of organization (of Aff.)</i> <i>City, Country</i> <i>email address or ORCID</i>

Abstract—This document is a model and instructions for IEEE. This and the IEEEtran class define the components of your paper (title, text, heads, etc.). *CRITICAL: Do Not Use Symbols, Special Characters, Footnotes, or Math in Paper Title or Abstract.

Index Terms—composition, formatting, style, styling, layout

I. INTRODUCTION

This document is a model and instructions for IEEE. Please observe the conference paper limits.

II. EAST OF USE

A. Maintaining the Integrity of the Specifications

The IEEEtran class file is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, and not as an independent document. Please do not revise any of the current dimensions.

B. Units

- Use only SI (MKS) or CGS as primary units. SI units are encouraged; English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as "3.5-inch disk drive".
- Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity that you use in an equation.
- Do not mix complex spellings and abbreviations of units: "Whatt" or "watts per square meter", not "watt/cm²". Spell out units when they appear in text: "... a few meters", not "... a few ft".
- Use a zero before decimal points: "0.25", not ".25". Use

Table: Potential Journals for Submission

Journal	Text Match Score (1 to 5)	CiteScore	Acceptance Rate %	Time to First Decision (days)
Journal of Commodity Markets	5	4.3	-	60
Finance Research Letters	5	11.1	24%	10
Energy Economics	5	10.8	-	30
Journal of Business Research	4	11.2	-	12
Economic Modelling	5	5.8	-	18
Journal of Banking and Finance	5	6.4	25%	40
Journal of Beh. and Exp. Finance	4	4.5	-	6
Emerging Markets Review	5	4.1	-	30
Computers and Elec. in Agriculture	5	7.6	30%	15
International Economics	4	3.9	-	45

Source: Elsevier Journal Finder Results



Elsevier. (2024). **Reviewer Hub: Guidance and support for peer reviewers**. Recuperado de <https://elsevier.international/reviewers.html>.






IEEE. (2024). **Conference Paper Templates**. Recuperado de <https://www.ieee.org/conferences/publishing/templates.html>.



Overleaf. (2024). **IEEE Conference Template for Overleaf**. Recuperado de <https://www.overleaf.com/latex/templates/ieee-conference-template/grfzhnhncsfqn>.

Special thanks to...

⇒ To the guiding professor Gilberto Reynoso Meza  and to all the participants present here 

Check out my projects and tutorials on econometrics applications on my [GitHub repository](#) 

You can also access my CV and portfolio at:

<https://rhozon.github.io/>

- ▶ My repository on [GitHub](#) 
- ▶ My profile on [LinkedIn](#) 
- ▶ My Resume on [Lattes Platform](#) or [send me an email](#)

Acts 8:31... Many thanks to all! 😊