

Systematic Literature Review of Top 10 Publications in the Derivatives Market

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Abstract: This article gives a systematic literature review of the top ten publications in the derivative market. This study aims to scientifically assess research trends in the derivative market and examine the most cited articles in the area of derivatives. The data were collected from the Scopus database using specified search criteria. In this study, Microsoft Excel was used to assess the citation structure and evaluation of top literature also included in the study. The results show that scientific research in this sector has grown rapidly, particularly since 2004. An analysis of leading authors shows that the author Doojin Ryu has the highest number of publications with 13 documents. The systematic literature review of the top ten most cited articles reveals that ninety per cent of research in the derivative market is associated with the topic "information flow and price discovery of underlying assets". The insights offered in this paper are beneficial for both derivative market researchers and bibliometric analysis researchers.

Keywords: Systematic Literature Review, Derivative Market, Futures and Options

JEL Classification code: A100, A140, G32 and G130

1. Introduction

Financial products known as derivatives are those whose value is based on the underlying, which might be anything from a stock index to a stock to a commodity like pepper to a complex feature like interest rate. The majority of people now use derivatives to make speculative gains, which further increases their popularity. Derivatives were initially intended to be risk management instruments. The daily growth in derivatives trade volume demonstrates the use of derivatives. These facts have motivated the author to conduct a systematic literature review in the field of Derivative markets all over the world. There are two primary contributions to this work. Firstly, the literature evaluation of the top ten derivative market papers reveals the trends in the field's active research projects. And finally, this study makes an incremental contribution to the literature on finance, especially in the derivative market.

The remainder of the paper is structured as follows. Section 2 discusses the research problem, while Section 3 presents a brief literature review. The research methods and data were discussed in Section 4. Section 5 describes the result of the data analysis. Section 6 provides an overall discussion. Finally, Section 7 concludes the paper with the future scope of study in the area of the derivative market.

2. Research Problem

The aim of review papers is generally to do critical evaluations of material that has already been published, some that include meta - analysis (quantitative effects estimation) and some that include systematic reviews (without quantitative estimations). Bibliometric papers summarize large quantities of bibliometric data to present the state of the intellectual structure and emerging trends of a research topic or field (Donthu et al., 2021). The goal of this study is to identify and synthesize relevant literature in the area of

derivative markets, comprehend recent research advancements in the field, and offer a solid foundation for future derivative market research. The following research questions will help the study accomplish its goal.

- How has the number of publications on the derivative market changed over time, and what changes have occurred in the literature on derivative markets?
- Which publications and writers are the most significant in the derivatives market?

3. Literature review

For investigating and analyzing vast amounts of scientific data, bibliometric analysis is a well - liked and exacting technique. It enables us to explore the subtleties of a field's evolutionary history while illuminating its frontiers (Donthu et al., 2021). In the last 40 years, derivatives have become increasingly important in finance. Futures and options are actively traded on many exchanges throughout the world (Hull & Basu, 2017). Bibliometric evaluations of issues linked to the derivative market have been performed in the past. Stock Market Prediction: The perspective of Emerging Markets was the subject of a bibliometric investigation by Somanathan & Rama, (2020). The research is based on Web of Science, Scopus, and JSTOR databases. The key finding is that the real phenomena affecting stock market sectors are varied and, as a result, generalization is limited. The number of publications and citations in the Journal increased significantly each year, with authors from the United States accounting for the majority of the contributions. Commodities, volatility, trading, hedging, arbitrage and pricing, forecasting volatility, and credit default swaps are among the Journal's key themes, according to bibliographical coupling. Kaur & Goel, (2021) aims to provide a quantitative and thorough summary of research on market efficiency, price discovery, and volatility in commodity futures markets. The researchers employed a combination of bibliometric and network analysis approaches to classify and analyze the

literature to uncover important patterns and themes in the subject. Another study by *Choi et al., (2022)* examines 30 years of academic research on herd behaviour in financial markets. The Web of Science database was chosen to collect bibliographic data and give numerous bibliometric indicators, such as the number of citations, publications, and authors, as well as to visualize the similarities using bibliometric approaches. The findings demonstrate a huge increase in herd behaviour studies, particularly in the aftermath of the subprime mortgage crisis.

Based on a review of the literature it is clear that no studies of bibliometric analyses directly relevant to derivative markets have been done to date. As a result, there is a research gap that the author has observed which inspires the current work. This research is being carried out to explain the performance and trend of publications on the subject of derivative markets, as well as to comprehend the top articles published in the area.

4. Methodology

The Scopus database was used to analyze this study. Scopus and Web of Science (WoS) have recently established themselves as the most widely used and trusted databases for scientific articles. Even though WoS is an approved data source, Scopus has lately surpassed WoS as the most popular database for analysis (*Singh, 2021*).

4.1 Data source

The dataset has been extracted from Scopus. In search criteria the following search string was applied – *TITLE - ABS - KEY (equity AND derivatives AND market) OR TITLE - ABS - KEY (futures AND option AND market) AND TITLE - ABS - KEY*

(hedging) OR TITLE - ABS - KEY (trading)) AND (LIMIT - TO (DOCTYPE, "ar")). As a result of this search, the Scopus database returned 858 results. This resulted in the dataset for doing systematic literature analysis in the area of the derivative market. The search was made on 20th March 2022 by choosing only research articles that were published until the search date.

5. Results

The findings have been discussed in the two sections.

- 1) **The Structure and Trends of Publications:** This section includes annual trends in publications and an analysis of publications of leading authors.
- 2) **Systematic Review:** This section provides a summary of the top ten most influential publications in the area of the derivative market.

5.1. Annual trends in publication

If we look at the development of publications on the derivative market (Fig.1), we can see that research in this area has expanded quickly, especially since 2004. Between 2005 and 2022, 80.19 per cent of all research was published in this area. This information demonstrates that derivative markets are a significant area of research and that there is growing interest in and progress in the field. Figure 1 shows that the number of publications was quite low until 1995 (less than 5 publications a year). The majority of the studies published during this period are connected to futures and options trading. After 1996, the pattern shifted and the number of publications per year has been increasing since 2004. Since 2005, there has been substantial growth in derivative market publications.

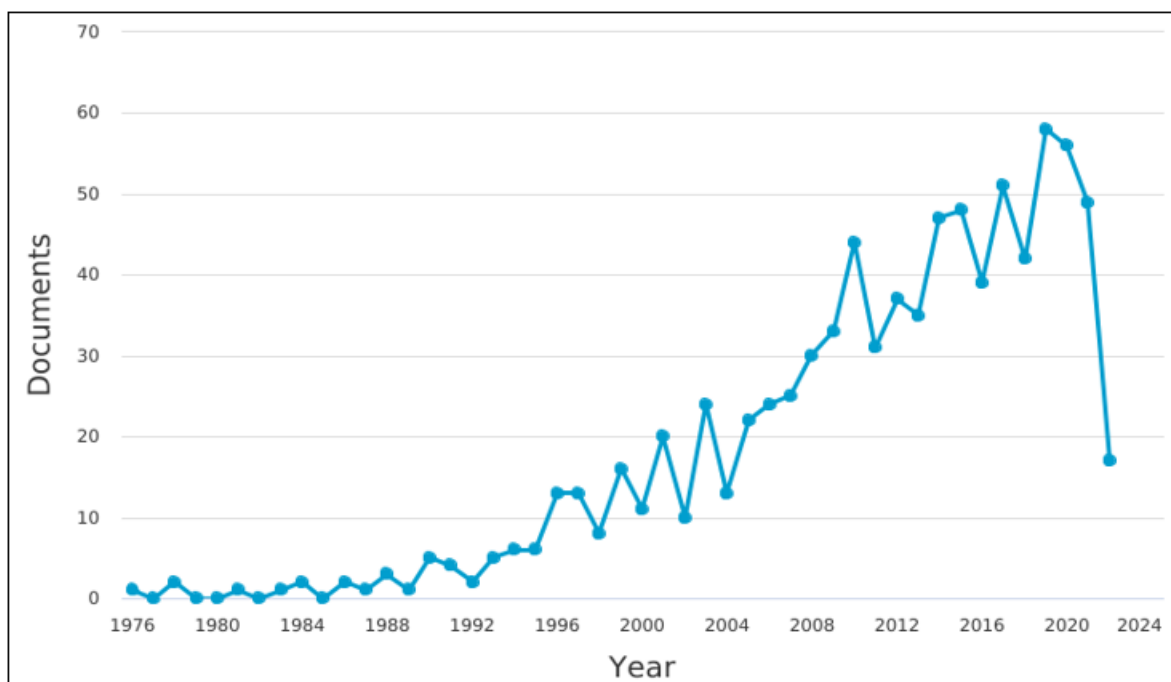


Figure 1: Annual Number of Publications

(Source: <https://www.scopus.com/>)

During the period between 2005 and 2015, derivative market research focused on stock market volatility and its impact on

derivative trading. It is worth noting that after the year 2015, research on options trading dominated derivative research.

5.2. Leading authors

The results of an analysis of leading writers, institutions, and countries are summarised here. When we examine the authors who have researched the derivative market (Fig.2), we see that Prof. Doojin Ryu of Sungkyunkwan University in Seoul, Korea, is the most productive author, with 13 published articles in Scopus. The majority of his research focuses on the futures and options markets. His most recognised work (*Ahn & Ryu, 2008*) examines whether informed trading is present

in the index option market by analyzing the KOSPI 200 options, the most actively traded derivative product in the world. *Keith P. Wong*, second on the list, is a Finance professor at HKU Business School, University of Hong Kong. He has done various research on risk management that examines the issues of how risk - averse firms should hedge their exposure to various sources of uncertainty (e. g., exchange rate risk, price risk, and liquidity risk) in general and the optimality of using options as a hedging instrument in particular.

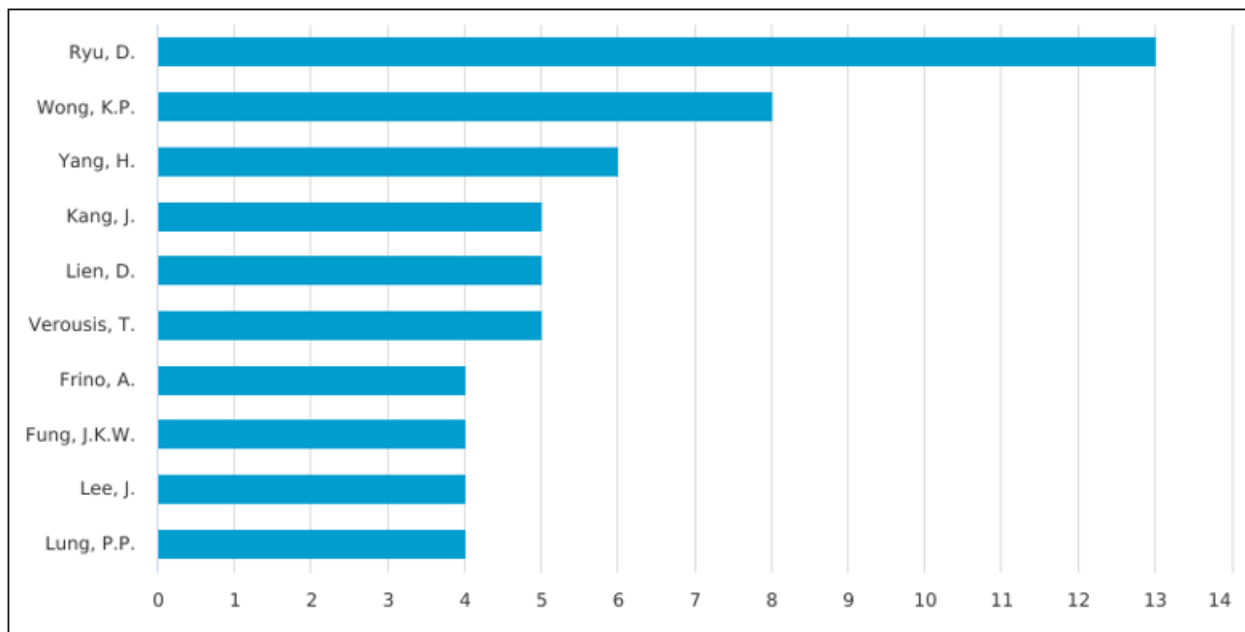


Figure 2: Number of publications of leading authors

(Source: <https://www.scopus.com/>)

Prof. Heejin Yang is a faculty of the College of Management & Economics, Dongguk University Gyeongju, Korea, and all of their publications are in association with Prof. Doojin Ryu. Prof. Jangkoo Kang is at the Graduate School of Finance, KAIST, Seoul, Korea. Prof. Donald Lien is at the Department of Economics, University of Texas, USA. Dr Lien’s primary field of interest is in the futures market with supporting areas in econometrics and development economics. Dr Thanos Verousis is a Reader in Finance at Essex Business School, University of Essex, Colchester, UK. He specializes in financial markets and market microstructure. Alex Frino is the Deputy Vice - Chancellor (Global Strategy) of the University of Wollongong, Sydney, Australia. A distinguished international financial economist. He is one of the best - published financial economists in the world with over 100 papers in leading scholarly journals. Joseph K. W. Fung is the Professor Emeritus of, the Department of Finance and

Decision Sciences at Hong Kong Baptist University in Hong Kong. Jaewook Lee is a Professor of Industrial Engineering, at Seoul National University. Peter P. Lung is a professor at the University of Dayton.

5.3. Systematic review of top 10 publications

Systematic reviews have been referred to as the gold standard among reviews because they were developed to synthesise research findings in a systematic, transparent, and reproducible manner (Snyder, 2019) . In the current study, 858 documents were extracted from the Scopus database using predefined search criteria, and there is room for a systematic literature review, but only a summary analysis of the top ten articles was performed because this paper is more focused on bibliometric analysis. A list and a summary of Top - 10 highly cited journal articles have been shown in Table1.

Table 1: Descriptive Summary of Top Ten Documents

Authors	Title of Paper	Journal Name Year of publication	Total Citations	Contributions to the Derivative Market
I. Scheinkman J. A., Xiong W.	Overconfidence and speculative bubbles	Journal of Political Economy (2003)	852	This study provides a simple model to study bubbles and trading volume that result from speculative trading among agents with heterogeneous beliefs. The study shows the presence of overconfidence on the part of potential stock buyers could induce shareholders to use short - term stock compensation to motivate managerial behaviour that increases short - term prices at the expense of long - term performance. The study found that Tobin’s Taxcan substantially reduces speculative trading, but it has only a limited impact on the size of the bubble or price volatility.

2. Acharya V. V., Johnson T. C.	Insider trading in credit derivatives	Journal of Financial Economics (2007)	340	This study attempts to quantify the problem of Insider trading in the credit derivatives market. The study provides empirical evidence that there is an information flow from the credit default swap markets to equity markets. The study found that the degree of asymmetric information adversely affects prices or liquidity in either the equity or credit markets
3. Pan J., Poteshman A. M.	The information in option volume for future stock prices	Review of Financial Studies (2006)	339	This study examines the informational content of options trading for future movements in underlying stock prices. The study presented strong evidence that option trading volume contains information about future stock prices. The study found that Stocks with low put - call ratios outperform stocks with high put - call ratios by more than 40 basis points on the next day and more than 1% over the next week.
4. Allen F., Santomero A. M.	The theory of financial intermediation	Journal of Banking and Finance (1998)	305	This study examined the state of intermediation theory and attempt to reconcile it with the observed behaviour of institutions. The study points out that Intermediaries have become more important in traditional markets and account for a very large majority of the trading in new markets, such as those for various types of derivatives. Standard theories of intermediation based on transaction costs and asymmetric information are difficult to reconcile with the changes that have taken place. It was argued that the new market for financial futures and options was mainly a market for intermediaries rather than individuals or firms.
5. Avellaneda M., Paras A.	Pricing and hedging derivative securities in markets with uncertain volatilities	Applied Mathematical Finance (1995)	296	The study addresses the issue of derivative asset pricing and hedging in an uncertain future volatility environment and presented a very useful model for pricing and hedging derivative securities and option portfolios in an environment of unknown volatility. This model captures the importance of diversification in managing derivatives positions and can be used systematically to construct efficient hedges using other derivatives in conjunction with the underlying asset.
6. Chiras D. P., Manaster S.	The information content of option prices and a test of market efficiency	Journal of Financial Economics (1978)	281	This study attempts to determine the informational content of observed option prices. The study found that Black - Scholes - Merton Option Pricing Model can be used to calculate the implied volatility of future stock returns. Based on the findings they developed a trading strategy that exploits the informational content of the implied volatility of option price. The study proves that in contrast to the efficient market hypothesis, this trading strategy generates excessively high returns.
7. Daskalakis G., Psychoyios D., Markellos R. N.	Modelling CO2 emission allowance prices and derivatives: Evidence from the European trading scheme	Journal of Banking and Finance (2009)	258	The authors studied the three main markets for emission allowances within the European Union Emissions Trading Scheme. They investigated the pricing of emission allowance options on futures. The study found that the prohibition of banking emission allowances between distinct phases of the EU ETS has significant implications in terms of futures pricing. The study developed a framework for the pricing and hedging of intra - phase and inter - phase futures and options on futures, respectively. Based on the empirical evidence the study concluded that the jump - diffusion model is the most appropriate pricing method for the intra - phase and inter - phase options on futures which are already traded within the EU ETS
8. Fleming J., Ostdiek B., Whaley R. E.	Trading costs and the relative rates of price discovery in stock, futures, and option markets	Journal of Futures Markets (1996)	256	This study tests the trading cost hypothesis by examining the relationship between stock market returns and index option - implied returns. The study found that for individual stocks, price discovery takes place in the stock market because the stock market offers lower direct trading costs and is deeper and more active than any particular stock options series. For market - wide information, price discovery occurs in the index derivative markets where trading costs are considerably less than the costs of executing basket trades in the stock market.
9. Carr P., Wu L.	A Tale of two indices	Journal of Derivatives (2007)	190	This study examines the major differences between the old and the new volatility indexes of the Chicago Board of Options Exchange. It also looks at the historical behaviour of the new volatility index and discusses the pricing of VIX futures and options. The study found that the new VIX averages about 2 percentage points higher than the bias - corrected version of the old index. The study also proves that the SPX options market offers information on VIX futures valuation bounds.

10. Booth G. G., So R. W., Tse Y.	Price discovery in the German equity index derivatives markets	Journal of Futures Markets (1999)	158	This study examines the intraday price discovery process among stock indexes, index futures, and index options in Germany using DAX index securities and intraday transaction data. The result shows that the three markets are informationally linked, with arbitrage being the mechanism by which this linkage is obtained. The driving force appears to be stock index futures, but index options contribute to the price discovery process measurably.
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(Source: Author)

One striking conclusion that can be drawn from analysing the top ten Most cited articles is that nine out of ten studies are associated in some manner with the topic "information flow and price discovery of underlying assets". This means the majority of studies on the derivative market are done in this particular area. In a landmark study *Scheinkman & Xiong, (2003)* finds that the increased trading cost reduces the trading frequency, asset price volatility and options value, another study by *Pan & Poteshman (2006)* says that options trading volume contains information about future stock prices more precisely the stocks with low put - call ratios (PCR) outperform stocks with high put - call ratios by more than 40 basis points. *Avellaneda & Levy, (1995)* presented a highly useful model for pricing and hedging derivative securities and option portfolios in an environment of unknown volatility. In the latest study of the above list *Daskalakis et al., (2009)* did a unique study about carbon emission trading and pricing of options, whereas the oldest study (*Chiras & Manaster, 1978*) examined the informational content of observed option prices and test of market efficiency. Another notable point is that half of the above research was conducted between 2003 and 2009, while the other half was conducted between 1995 and 1999. It is also worth noting that the majority of cited publications are published in three journals: the Journal of Financial Economics (2 articles), the Journal of Banking and Finance (2 articles), and the Journal of Futures Markets (2 articles).

6. Discussions

Research in the area of the derivative market was only intensified after 1997, even though some of the most quoted papers in the derivative market were published in the 1970s (*Black & Scholes, (1973)*, *Chiras & Manaster, (1978)*, *Ross et al., (1979)*). The work of Myron Scholes and Robert C. Merton, who shared the Nobel Memorial Prize in Economic Sciences in 1997 for their work on estimating the value of derivatives, is critical here. We can also observe that research in this sector has grown rapidly, particularly since 2004. An analysis of leading authors shows that the author *Doojin Ryu* has the highest number of publications with 13 documents. The analysis shows that the most cited article is "Overconfidence and speculative bubble" by *Scheinkman & Xiong, (2003)* with 852 citations. The systematic review of the top ten most cited articles reveals that ninety per cent of research in the derivative market is associated with the topic "information flow and price discovery of underlying assets".

7. Conclusion and future scope of research work

This study conducted a systematic review and bibliometric analysis of derivative market literature based on the Scopus database. The tools such as performance analysis and

systematic literature review were used to examine various elements such as publishing and citation patterns. According to the literature study, *information content in options implied volatility, trading volume, carbon trading and energy derivatives*, are novel topics of research in the derivative market. This study analyses the most prolific authors, institutions and documents, as well as the pattern and significant subjects of derivative market research. As a result, this article adds a significant piece of work to an existing body of knowledge about the derivative market.

The publications reviewed here have assisted in identifying the key research gaps and highlighted future study directions, particularly empirical research on options trading strategies, an area where research is very rare. Future lines of research could also incorporate, for example, the research to analyse the informational content of options trading volume in the Indian stock market or the effectiveness of volatility - based trading strategies in options. Another area for further research may be the study to examine the effect of covid19 pandemic on derivative trading activity in exchanges in India.

There are some limitations of this current study. The derivative market has a broad dimension that includes equity derivatives, commodity derivatives, foreign exchange derivatives, interest rate derivatives swaps, etc., a complete discussion on them has been kept outside the scope of this study. This study considers the derivative market as a whole and there is a scope for bibliometric study in each specific area of the derivative market such as a bibliometric study on commodity derivatives which can be conducted in future. Another limitation is that this study is conducted based on information extracted from the Scopus database only. Other databases like Web of Science, Dimensions, Google Scholar, etc., could also be used for the extraction of data in future studies. The keyword search could be modified to include additional keywords so that more publications relevant to this field are included in the study. For an in - depth grasp of the study domain, the Science mapping should be supplemented with abstract reading and manual selection of articles, followed by the intensive reading of the full text. So a systematic literature review with meta - analysis on the field could be taken up by researchers in the future.

Author Contribution statement

The authors confirm their contribution to the paper as follows: Study conception and design: Subeesh V. K. and Liya K. Data collection: Subeesh V. K.; analysis and interpretation of results: Subeesh V. K. Draft manuscript preparation: Subeesh V. K and Liya K. . All authors reviewed the results and approved the final version of the manuscript.

Conflict - of - interest statement

The authors have no conflicts of interest to declare. All authors have seen and agree with the contents of the

manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication

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