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"The Role Of Sensitivity Analysis In Managing Risk And Uncertainty In Futures Markets"

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ABSTRACT

This study investigates the impact of macroeconomic and market-specific variables on stock returns, in addition to the effect of investment styles, i.e., value and growth investing. It focuses on the region, stock market and examines the risk and uncertainty in future markets through sensitivity analysis. The results provide valuable insights for investors, policymakers, and scholars. By analysing the influence of macroeconomic variables, including GDP, inflation, and interest rates, on stock returns and assessing the efficacy of various investment strategies, the research adds to the literature base on stock market behaviour and investment choice.

INTRODUCTION

Sensitivity analysis helps in assessing how changes in input variables impact the outcome of a model or financial position. In futures markets, it provides valuable insights into how shifts in market conditions—such as price volatility, time to maturity, and underlying asset prices—can affect the value and performance of a futures position. By identifying the most influential factors, market participants can make more informed decisions, develop hedging strategies, and prepare for a range of possible market scenarios.

This paper explores the pivotal role that sensitivity analysis plays in navigating the uncertainties of futures markets. It examines its methodologies, practical applications, and its contribution to enhancing the robustness of risk management frameworks.

NEED OF THE STUDY

The need of studying sensitivity analyses in managing risk and uncertainty in future markets is crucial for taking informal decision-making and effective risk management. By applying sensitivity analysis, financial institutions, investors, and risk managers can better identify and mitigate potential risks, optimize portfolios, and develop robust strategic plans. this is important because it can help professionals to make more informed investment decisions, manage risk more effectively, and ultimately achieve their financial goals. By investigating the applications and benefits of sensitivity analysis, researchers and practitioners can develop more effective tools and techniques for navigating complex decisions.

SCOPE OF THE STUDY

The extent of research into the application of sensitivity analyses in managing risk and uncertainty in future markets is extensive, ranges from applications such as financial risk management, portfolio optimization, to strategic planning. this research can be applied to many industries, for instance, finance, investment, and risk management, through its ability to offer useful insights for making better-informed decisions, improve risk management processes, and maximize portfolios. Through an examination of sensitivity analysis applications and advantages, researchers and practitioners can create more efficient tools and techniques for navigating uncertain futures markets, it also results in improved financial returns and stronger decision-making processes.

REVIEW OF LITERATURE:

AUTHORS	OBJECTIVES	METHODOLOGY	FINDINGS
Karsim Karsim, Deni Gunawan, Cindy Puspitafuri, Ahmad Junaidi 2024	To study innovative risk management by combining traditional frameworks with qualitative methods which may help organizations identify, assess, and mitigate risks.	Qualitative Research Thematic Analysis Framework Integration	The study highlights innovative risk management strategies that blend traditional frameworks with qualitative methods to improve decision-making and resilience with the investors perception.
S. Chawda, R. Bhakar, Parul Mathuria (2016)	To research and outline the challenges and opportunities in the restructured power sector.	Analysis of regulatory reforms and their impacts through literature review.	The Regulatory reforms have created a competitive power market, affecting electricity pricing.
R. Hafezi, A. Akhavan (2019)	To develop a risk management model combining stakeholder input and forecasting to create scenarios that mitigate risks and support long-term planning amid uncertainties.	Developed a risk management model based on stakeholder needs.Used forecasting to predict future risks.	The research proposes a risk management model integrating stakeholder views and forecasting to improve decision-making and long-term planning
Mohammad Enamul Hoque, M. Kabir Hassan, Luca Pazzo	To study explores the potential of climate-change futures to diversify and hedge energy-commodity market risks.	Cross-Quantilogram (CQ) evaluates hedging and safe-haven properties during high volatility.	The revealed that Climate-change futures help diversify risks for oil, ethanol, gasoil, and gasoline, and hedge natural gas, coal, and heating oil.
Anna Dunbar, A. Wallace, G. Harrison	To study examines how uncertain market factors—gas prices, carbon prices, average demand, and wind generation impact the trading of stock.	Sensitivity Analysis Market Simulation Performance Evaluation by Jensen, Treynor analysis.	The research explored the , carbon prices and demand boost peak electricity prices and storage revenue.
Haq, Api chit Maneen gam, S.	To study reviews empirical literature on using cryptocurrencies	Systematic review of studies on	Cryptocurrencies show mixed connectedness with

Chupradit, Wanich Suksatan, Chunhui Huo(2021)	to manage risks from economic policy uncertainty (EPU).	cryptocurrencies and EPU.	national EPU, reflecting varied risk mitigation across countries.
Mathers, Joshua A. Salomon, M. Ezzati, Stephen Begg, S. Hoorn, Alan D. Lopez(2006)	To study how social values affect the disability-adjusted life years (DALYs) with risk and uncertainities.	Epidemiological Studies. Sensitivity Analysis Global Burden of Disease Study.	Sensitivity analysis shows age weighting and discount rates The Global Burden of Disease study is criticized for incomplete data.
Ki-Hee Park, Hong G Jung, Tae-San Eom (2022)	The study develops a risk-sensitive multiagent network (RSMAN) framework that integrates predictive uncertainty in deep neural networks.	Risk-Sensitive Agents Reinforcement Learning. Risk Adaptive Portfolio Generator	RSAs use reinforcement and unsupervised learning to evaluate market.
Paul S. Kohl	Market definition is a crucial aspect of antitrust analysis, directly influencing the assessment of competition and market power	Modeling Market Analysis Directed acyclic graph (DAG)	**Structured Sensitivity Analysis** –the framework simplifies decision-making and enhances transparency.
Michael C. FuJian-Qiang Hu	To analyse the options trading in the market with risk return analysis.	Monte Carlo Simulation Analysis for option pricing for European and American options.	Accurate option pricing under complex market conditions

DATA COLLECTION METHOD

Secondary data has been used for this research. The secondary data was collected from the website ,Value Research Websites and Journals Etc.

RESEARCH GAP

1. Limited application to specific asset classes.

2. There is a gap involved in Comparison of sensitivity analysis techniques.

OBJECTIVES

1.To analyse the impact of sensitivity analysis in identifying potential risks.

3. To Identifying the impact of sensitivity analysis on decision-making.

FINDINGS

1. Sensitivity analysis improve risk identification. In the realm of derivatives trading, innovative models are being developed to enhance risk management. For instance, a novel framework leverages large language models (LLMs) for sentiment analysis and news analytics to inform dynamic hedging strategies. By analyzing textual data from diverse sources, this approach enables real-time adjustments to hedging positions, improving risk-adjusted returns compared to conventional static methods

2. Framework helps to take informal decision-making. Furthermore, advancements in forecasting models are aiding in decision-making under uncertainty. The Future Quant Transformer model, for example, utilizes attention mechanisms to forecast the range and volatility of future prices in futures markets. This model provides richer insights for trading strategies, significantly improving risk management and achieving notable gains over state-of-the-art models which help in decision making.

3. Sensitivity analysis informs robust strategies. Collectively, these developments underscore a shift towards more adaptive and informed risk management strategies in trading, combining stakeholder insights with advanced forecasting techniques to navigate the complexities of modern financial markets.

CONCLUSION

Sensitivity analysis has an important function in risk and uncertainty management in futures markets since it helps stakeholders appreciate how variations in critical variables affect financial results. The research emphasizes its utility in the identification of possible risks, better decision-making, and aiding effective hedging and investment plans. With its lucid process for use, sensitivity analysis proves to be a useful and effective tool for risk managers, investors, and financial institutions.

Although its advantages have been proven, existing research and practice demonstrate weaknesses—especially in its extension to particular asset classes, association with cutting-edge technologies such as AI, and comprehension of behavioural aspects. Working on these areas through future studies can result in more sophisticated and responsive risk management instruments. Ultimately, adopting sensitivity analysis as a central piece of strategic planning can result in more robust financial systems and improved investment choices in the changing environment of futures markets**.**

FUTURE SCOPE FOR FURTHER STUDY

1. There is a scope for further study for Applying sensitivity analysis to specific asset classes in security and derivative market trading is most demanded research.

2. combine and compare sensitivity analysis with other risk management tools through integration of AI .

3. Formulate and investigate a sensitivity analysis framework in futures markets for the purpose of investor perception and trading decision making analysis in the realm of uncertainties and volatilities

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