



**AUCKLAND CENTRE FOR
FINANCIAL RESEARCH**

AUT

FULL PROGRAMME

7TH & 8TH SEPTEMBER 2023



**DERIVATIVE MARKETS
CONFERENCE 2023**

KIA ORA and WELCOME

Welcome to the 2023 Derivative Markets Conference, which is hosted by the Auckland Centre for Financial Research. The Derivative Markets Conference started in 2014 as a boutique conference that focuses on derivative markets research in its broadest sense. This year's conference received around 40 submissions and accepted 16, for inclusion in the programme. The strict selection reflects the strong quality of the papers that are included in the programme. For the first time since Covid19, this conference is back in New Zealand.

We would like to thank all participants of this conference for their contributions through paper presentations, paper discussions and session chairs. The quality of any conference is contingent on the quality of presentations and discussions, and we encourage all participants to contribute to all aspects of the conference, as much as they can.

We also would like to thank our keynote speaker, Professor Geert Rouwenhorst, from Yale University for his valuable contribution to this event. We also thank Professor Bart Frijns for dedicating a special issue of the Journal of Futures Markets to papers presented at this conference. Finally, we would like to thank Mrs. Tracy Skolmen for her superb assistance with the administrative and logistic side of things.

We hope that you will enjoy this Conference in Auckland and wish you all a happy and productive year.

On behalf of the Organising Committee,

Adrian Fernandez-Perez

Director of the Auckland Centre for Financial Research at Auckland University of Technology



**AUCKLAND CENTRE FOR
FINANCIAL RESEARCH**

ORGANIZERS

Dr Adrian Fernandez-Perez, ACFR, Auckland University of Technology, New Zealand

Professor Bart Frijns, Open Universiteit, The Netherlands

Dr Prasad Hegde, Auckland University of Technology, New Zealand

CONFERENCE PARTICIPANTS

Adrian Fernandez-Perez, Auckland University of Technology
Ai Jun Hou, Stockholm University
Bart Frijns, Open University of the Netherlands
Erik Schlogl, University of Technology Sydney
Geert Rouwenhorst, Yale University
Guanglian Hu, University of Sydney
Ion Lucas Saru, VU Amsterdam and Tinbergen Institute
John Hua Fan, Griffith University
Les Oxley, University of Waikato
Lingshan Du, Guanghua School of Management, Peking University
Ni Yang, Auckland University of Technology
Prasad Hegde, Auckland University of Technology
Raymond Kim, W.A. Franke College of Business, Northern Arizona University
Thanh Vu, University of Auckland
Tingxi (Riven) Zhang, Curtin University
Weihan Li, University of Otago
Wenjun Zhang, Auckland University of Technology
Wenqiang Liu, Auckland University of Technology
Yiwei Chuang, National Kaohsiung University of Science and Technology
Yuan Lu, Chinese University of Hong Kong

CONFERENCE TIMINGS

20 Minute Presentations
5 Minute Discussions
5 Minute Q & A

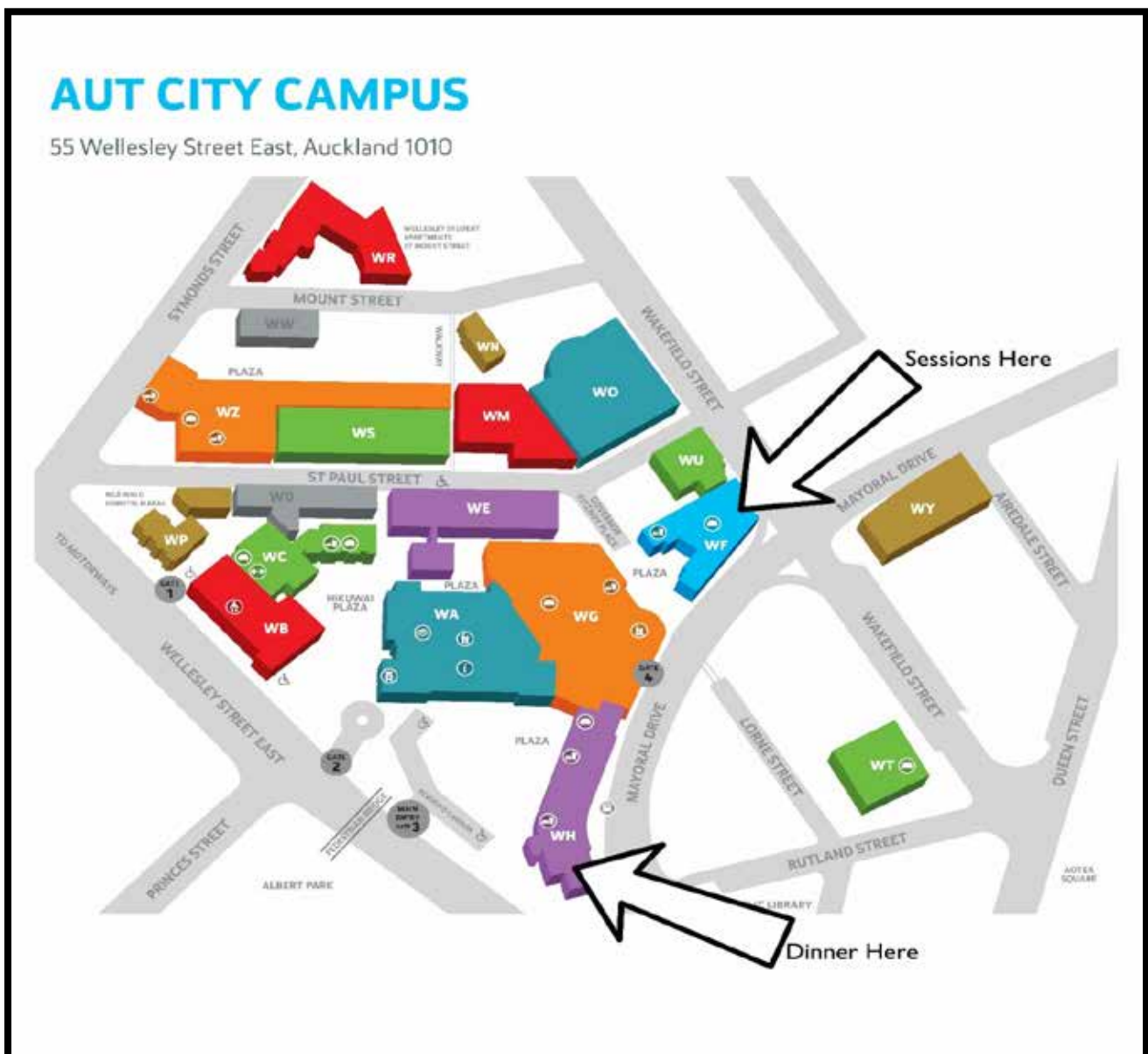
KEYNOTE SPEAKER

GEERT ROUWENHORST, YALE UNIVERSITY



Geert Rouwenhorst specializes in empirical finance and asset pricing. His research interests include risk and return in international equity markets, commodity investments, and the history of financial innovation. He has held visiting positions at MIT and the IMF. His co-edited book *The Origins of Value: The Financial Innovations that Created Modern Capital Markets* surveys key historical innovations in the field of finance, and was named a book of the year by *Barron's* and *the Economist*.

CAMPUS MAP



DAY 1: PROGRAMME OVERVIEW, THURSDAY 7TH SEPTEMBER 2023

THURSDAY
08:45 to 09:00

REGISTRATION & ARRIVAL COFFEE AND TEA

WF8 Lounge

THURSDAY
09:00 to 09:30

WELCOME AND INTRODUCTION:
Bart Frijns, Open University

ROOM WF710

THURSDAY
09:30 to 10:00

MORNING TEA BREAK

WF8 Lounge

THURSDAY
10:00 to 12:00

SESSION 1

ROOM WF710

CHAIRPERSON Prasad Hegde, Auckland University of Technology

PAPER **MEDIA EMOTION INTENSITY AND COMMODITY FUTURES PRICING**

Lina El-Jahel, University of Auckland

Yeguang Chi, University of Auckland

Thanh Vu, University of Auckland

Abstract:

We investigate the role of media emotion in commodity futures pricing and propose a new factor, media emotion intensity, based on the proportion of emotional content relative to factual content. Our factor exhibits an annual premium of around 14% after we control for other commonly considered benchmark factors. The impact of media emotion is especially strong for commodities with low media coverage, high momentum, high basis-momentum, high hedging pressure, and backwardation. Media emotion intensity significantly predicts the cross-section of commodity futures return both at the portfolio level and the individual commodity level. Our simulated LASSO approach suggests that media emotion intensity is the most robust factor compared to other commonly considered benchmark factors. Furthermore, we investigate various risk channels that are potentially related to media emotion intensity and demonstrate that they cannot subsume the predictability of this media factor.

PRESENTER Thanh Vu, University of Auckland

DISCUSSANT Tingxi (Riven) Zhang, Curtin University

PAPER **THE INFORMATION VALUE OF MEDIA COVERAGE OF MARKET VOLATILITY: A TEXTUAL ANALYSIS**

Ming-Hung Wu, Beijing Normal University

Wei-Che Tsai, National Sun Yat-sen University, and Risk and Insurance Research Center, National Chengchi University

Nai-Wen Cheng, The Taiwan Futures Exchange

Yi-Wei Chuang, National Kaohsiung University of Science and Technology

Abstract:

Our primary aim in this study is to measure media sentiment using textual analysis of news stories, blog posts, and discussion messages, before going on to explore the links with market sentiment based upon large-scale web data feeds and VIX futures returns. Our results reveal that whilst the sentiment index (calculated overnight) can indeed predict daily VIX futures returns, its predictive power is weakened by macroeconomic announcements. The sentiment effect is also found to be more pronounced on days with high numbers of postings, trading volume, volatility, and illiquidity. Following the strategies highlighted by the media sentiment index, our portfolio exhibits high performance, particularly when the analysis relates to news articles. These findings suggest that media sentiment contains the economic value in volatility trading.

PRESENTER Yiwei Chuang, National Kaohsiung University of Science and Technology

DISCUSSANT Adrian Fernandez-Perez, Auckland University of Technology

PAPER**SOCIAL MEDIA SENTIMENT, HERDING AND MARKET INFORMATIONAL EFFICIENCY**

Ni Yang, Auckland University of Technology

Adrian Fernandez-Perez, Auckland University of Technology

Ivan Indriawan, University of Adelaide

Abstract:

This study investigates the impact of social media sentiment on financial market informational efficiency. Specifically, we interpret the qualitative Twitter emotions into quantified social media sentiment and examine how Twitter Bullishness affects return autocorrelation and variance ratio in a high-frequency context. We find that a higher Twitter Bullishness increases the following day's intraday return autocorrelation and variance ratio, indicating that Twitter sentiment reduces the market informational efficiency. The relationship between Twitter Bullishness and market informational efficiency persists after controlling for lagged efficiency, contemporaneous returns, intraday realized volatility, trading volume, market depth and VIX. Our results withstand the choices of sentiment analysis approaches and intraday sentiment intervals. Furthermore, we assess the mechanism by which social media sentiment influences market quality. We find that the impact of Twitter Bullishness is due to herding behaviors among traders. A higher Twitter Bullishness is associated with a higher herding effect in the following day during trading hours, while herding does not cause subsequent relevant higher sentiment on social media contrariwise. This study shows that investors are not able to efficiently react to social media sentiment, which may exacerbate the effective dissemination of information, and worsen the informational efficiency. This creates higher levels of fractions and costs of trading at intraday level, decreasing the market information incorporation process.

PRESENTER

Ni Yang, Auckland University of Technology

DISCUSSANT

Thanh Vu, University of Auckland

PAPER**NEWSWIRE TONE-OVERLAY COMMODITY PORTFOLIOS**

Adrian Fernandez-Perez, Auckland University of Technology

Ana-Maria Fuertes, University of London

Joëlle Miffre, Audencia Business School and Institute Louis Bachelier

Nan Zhao, Barclays Corporate and Investment Bank

Abstract:

We propose a method to overlay the tone of commodity-specific newswires upon the commodity characteristics traditionally used in long-short portfolio allocations. Implementing the tone-overlay strategy on 26 commodities generates substantial risk-adjusted profitability gains relative to the corresponding plain-vanilla traditional portfolios. Recession risk and limits-to-arbitrage risk emerge as key channels for the observed outperformance. The benefits of the tone-overlay tactical allocation are more pronounced when it focuses on very salient pessimistic or optimistic newswire tone in line with theories of limited investor attention. The tone-overlay approach is shown to be more effective than alternative approaches to embed newswire tone into traditional commodity allocations such as the equal-weight style-integration and double-sorting.

PRESENTER

Adrian Fernandez-Perez, Auckland University of Technology

DISCUSSANT

Yiwei Chuang, National Kaohsiung University of Science and Technology

THURSDAY
12:00 to 13:00**LUNCH BREAK**

WF8 Lounge

CHAIRPERSON Erik Schlogl, University of Technology Sydney

PAPER

A VARIATIONAL FORMULATION OF EUROPEAN OPTION PRICES IN THE 1-HYPERGEOMETRIC STOCHASTIC VOLATILITY MODEL

Wenjun Zhang, Auckland University of Technology

Abstract:

The paper proposes a variational analysis of the 1-Hypergeometric stochastic volatility model for pricing European options. The methodology involves the derivation of estimates of the weak solution in a weighted Sobolev space. The weight is closely related to the stochastic volatility dynamics of the model. The solution is further analysed using semigroup theory applied to the pricing operator. A full implementation of the model using the infinite element method is performed as well as a model calibration using a set of options to illustrate how the model works in practice. The analysis of the volatility distribution confirms the advantages of the model.

PRESENTER Wenjun Zhang, Auckland University of Technology

DISCUSSANT Erik Schlogl, University of Technology Sydney

PAPER

AN EMPIRICAL STUDY ON THE EARLY EXERCISE PREMIUM OF AMERICAN OPTIONS: EVIDENCE FROM OEX AND XEO OPTIONS

Weihan Li, University of Otago

Jin E. Zhang, University of Otago

Xinfeng Ruan, Xi'an-Jiaotong Liverpool University

Pakorn Aschakulporn, University of Otago

Abstract:

Since the S&P 100 Index underlies both American (OEX) and European (XEO) options, the value of the early-exercise premium of American options can be directly observed. We find that the mid-quote of an XEO option can be higher than that of an otherwise identical OEX option, and liquidity can explain this overpricing phenomenon of European options. Our results show that illiquid options are significantly overpriced in the S&P 100 Index options market. This finding indicates that an illiquid option can be overvalued with a higher market offer price, which is the requirement of market makers for compensation to provide liquidity.

PRESENTER Weihan Li, University of Otago

DISCUSSANT Guanglian Hu, University of Sydney

PAPER

SOFR TERM STRUCTURE DYNAMICS DISCONTINUOUS SHORT RATES AND STOCHASTIC VOLATILITY FORWARD RATES

Alan Brace, Financial Mathematics, Modelling and Analysis

Karol Gellert, University of Technology Sydney

Erik Schlogl, University of Technology Sydney, University of Cape Town, and University of Johannesburg

Abstract:

As more and more jurisdictions transition from LIBOR-type interest rate benchmarks to new risk-free rate (RFR) benchmarks based on overnight rates, such as SOFR in the US, it is important to adapt interest rate term structure models to reflect this. In particular, overnight rates are largely driven by monetary policy and thus display dynamics that are (at least to first order) piecewise constant between central bank rate decisions, while forward rates continue to evolve in a more diffusive fashion. We construct a tractable multifactor, stochastic volatility term structure model which incorporates these features. Calibrating to prices for options on SOFR futures, we achieve a good fit to the market across available maturities and strikes in a single, consistent model. The model also provides novel insights into SOFR term rate behaviour (and implied volatilities) within the SOFR term rate accrual periods, as well as into empirical mean reversion dynamics.

PRESENTER Erik Schlogl, University of Technology Sydney

DISCUSSANT Weihan Li, University of Otago

PAPER VOLATILITY RISKS IMPLIED FROM SHORT-TERM VIX FUTURES

Guanglian Hu, University of Sydney

Abstract:

We use a dynamic term structure model to extract latent volatility risk factors from short-term VIX futures. While the first factor, closely related to the level of volatility, does not contain predictive information about VIX futures returns, the second and third risk factors can significantly predict daily and weekly returns of VIX futures. The predictive power of the third volatility factor is particularly strong: It is robust to controlling for other known predictors, considering different VIX futures contracts and return calculation, and alternative methods for evaluating statistical significance. We find the third volatility factor captures both changes in risk and movements in open interest.

PRESENTER Guanglian Hu, University of Sydney

DISCUSSANT Wenjun Zhang, Auckland University of Technology

15:00 to 15:30

AFTERNOON TEA BREAK

WF8 Lounge

THURSDAY
15:30 to 17:30

SESSION 3

WF710

CHAIRPERSON Wenjun Zhang, Auckland University of Technology

PAPER INVESTOR SENTIMENT, UNEXPECTED INFLATION AND BITCOIN

Thomas Conlon, University College Dublin

Shaen Corbet, Dublin City University & University of Waikato

Les Oxley, University of Waikato

Abstract:

The introduction of regulated CME futures contracts on Bitcoin in 2017 raised an expectation that cryptocurrencies would become part of mainstream financial markets. This also heightened links between traditional markets and Bitcoin, with the implication that the cryptocurrency would be subject to systematic spillovers. In this paper, we use high-frequency data to examine whether bitcoin basis risk is linked to investor sentiment from established financial markets. We present strong evidence that extreme investor sentiment, represented by volatility indices such as the VIX, is associated with a Bitcoin futures price that is lower than the spot. These findings are partially attributed to a coinciding increase in the relative volume of Bitcoin futures and have greater magnitude during periods of unexpected inflation and deflation.

PRESENTER Les Oxley, University of Waikato

DISCUSSANT Yuan Lu, The Chinese University of Hong Kong

PAPER COMMODITY PREMIA AND RISK MANAGEMENT

John Hua Fan, Griffith University

Tingxi Zhang, Curtin University

Abstract:

We examine the role of risk management in the context of commodity factor premia. Stopping losses in individual commodities effectively improves the average returns of long-short commodity premia through persistent reduction in the frequency and severity of drawdowns. The magnitude of improvement is related to the quality of the signal, commodity return volatility and autocorrelations, as well as transactions costs. The efficacy of a stop-loss strategy can be enhanced by dynamically calibrating loss thresholds in accordance with realized volatility, and it performs best in high conviction weighting schemes. Overall, we highlight the pivotal role of risk management beyond volatility targeting and risk-parity in harnessing commodity risk premia.

PRESENTER Tingxi (Riven) Zhang, Curtin University

DISCUSSANT Prasad Hegde, Auckland University of Technology

PAPER **SKEWNESS, REALIZED VOLATILITY, AND OPTION PRICING**

Fang Liang, Sun Yat-sen University

Lingshan Du, Peking University

Abstract:

Efficiently exploiting information contained in price variations and accurately modelling the skewness of the underlying asset is critical for pricing options and other derivatives. In this paper, we propose a new and flexible option-pricing model that explicitly incorporates the dynamics of skewness and realized volatility. By the inverse Fourier transform, we derive closed-form option valuation formulas. Empirically, the model improves significantly upon benchmarks using S&P 500 index options. Overall, the joint modelling of skewness and realized volatility leads to an out-of-sample gain of 16.80% in pricing accuracy. The improvements are more pronounced for deep in-the-money calls, options with shorter maturities, and during highly volatile periods.

PRESENTER Lingshan Du, Peking University

DISCUSSANT Wenqiang Liu, Auckland University of Technology

PAPER **RESCALING THE MEAN-REVERTING 4/2 STOCHASTIC VOLATILITY MODEL FOR APPLICATIONS TO DERIVATIVE PRICING**

Jiling Cao, Auckland University of Technology

Jeong-Hoon Kim, Yonsei University

Wenjun Zhang, Auckland University of Technology

Wenqiang Liu, Auckland University of Technology

Abstract:

The 4/2 model, unifying the Heston and 3/2 models, exhibits important features of volatility and is somewhat tractable enough to provide a certain level of pricing procedure. However, a closed-form formula for derivative price is still lacking. We use a rescaling technique to obtain a closed-form formula for the approximate derivative price. Our formula has no integral term at all and it can be explicitly calculated by taking derivatives of the Black-Scholes price. Based on the analytic formula, we show that our model is more tractable than the original 4/2 model and yet flexible enough to capture important features of volatility.

PRESENTER Wenqiang Liu, Auckland University of Technology

DISCUSSANT Lingshan Du, Peking University

18:30 to 21:30

CONFERENCE DINNER

**FOUR
SEASONS
RESTAURANT**

3 Course Buffet Menu

END OF DAY ONE

DAY 2: PROGRAMME OVERVIEW, FRIDAY 8TH SEPTEMBER 2023

FRIDAY
08:30 to 09:00

ARRIVAL COFFEE AND TEA

WF8 Lounge

FRIDAY
09:00 to 10:00

KEYNOTE ADDRESS

STREAMED
LIVE FROM
USA
ROOM WF710

PROFESSOR GEERT ROUWENHORST, YALE UNIVERISTY

Why Contracts Fail

Why is financial innovation so difficult? Using a novel comprehensive database of 230 surviving and defunct commodity futures contracts that traded on 28 exchanges between 1871 and 2022, we explore the factors that predict the probability of failure of a financial innovation following its introduction. The factors include the requirement of fair compensation for bearing risk, the incidence of extreme returns that challenge the fairness of contracts, competition across contracts and exchanges, and systemic shocks such as wars, economic recessions, and financial crises. Our results shed light on the conditions for the successful evolution of financial markets.

FRIDAY
10:00 to 10:15

MORNING TEA BREAK

WF8 Lounge

FRIDAY
10:15 to 12:15

SESSION 4

WF710

CHAIRPERSON Raymond Kim, Northern Arizona University

PAPER **TRADING COSTS AND MARKET MICROSTRUCTURE INVARIANCE: IDENTIFYING BET ACTIVITY**

Ai Jun Hou, Stockholm University
Lars L. Norden, Stockholm University
Caihong Xu, Stockholm University

Abstract:

Market microstructure invariance (MMI) stipulates that trading costs of financial assets are driven by the volume and volatility of bets, but these variables are inherently difficult to identify. With futures transactions data, we estimate bet volume as the trading volume of brokerage firms that trade on behalf of their clients and bet volatility as the trade-related component of futures volatility. We find that the futures bid-ask spread lines up with bet volume and bet volatility as predicted by MMI, and that intermediation by high-frequency traders does not interfere with the MMI relation.

PRESENTER Ai Jun Hou, Stockholm University

DISCUSSANT Ion Lucas Saru, VU Amsterdam and Tinbergen Institute

PAPER **WHO KNOWS? INFORMATION DIFFERENCES BETWEEN TRADER TYPES**

Albert J. Menkveld, VU Amsterdam and Tinbergen Institute
Ion Lucas Saru, VU Amsterdam and Tinbergen Institute

Abstract:

We study the informativeness of agent and principal trades. Order informativeness depends on the horizon and frequency we analyse. In line with the literature on high-frequency trading, principals are more informed than agents at the highest frequency, as measured by the contribution of the respective order flow series to the variance of efficient price innovations. Once we move to lower frequencies, price discovery is dominated by agents, while the share of principals goes to zero. This is reflected in the gross trading revenues of agents and principals at different frequencies. Our results hold across market conditions as measured by the VIX.

PRESENTER Ion Lucas Saru, VU Amsterdam and Tinbergen Institute

DISCUSSANT Raymond Kim, Northern Arizona University

PAPER INTEREST RATE HEDGING AND SILICON VALLEY BANK IDIOSYNCRASIES

Raymond Kim, Northern Arizona University

Abstract:

Under a "mea-culpa" framework, evidence suggests that financial institutions practice discretionary hedging of both interest rate and funding risks, unlike Silicon Valley Bank and First Republic Bank. Banks asymmetrically manage risk by intensifying hedging with interest rate derivatives as HTM and AFS portfolio losses accrue, and by reducing hedging intensity as portfolio gains accrue. As funding risk increases, banks also intensify hedging, suggesting the mistakes of Silicon Valley Bank are idiosyncratic, not systematic. Evidence suggests financial institutions are generally successful at incorporating forward interest rate guidance when managing and anticipating balance sheet risks.

PRESENTER Raymond Kim, Northern Arizona University

DISCUSSANT Ni Yang, Auckland University of Technology

PAPER DELTA FLUCTUATIONS AND OPTION RETURNS

Yuan Lu, The Chinese University of Hong Kong

Abstract:

The paper documents a significant, robust positive relationship between delta fluctuations and option returns. As absolute delta fluctuations introduce equal risks to both option buyers and sellers, the return predictability of delta fluctuations cannot be attributed to a rational risk-based explanation. Instead, it stems from the asymmetrical risk perceptions of option buyers and sellers. Our findings suggest that option buyers play a dominant role in pricing the delta fluctuations, whereas the option sellers are inclined to be more "present-biased". The sellers' relatively lower awareness of risk contributes to the mispricing of delta fluctuations in options. Furthermore, we explore the time-series and cross-sectional variations of this option mispricing and find that, when limits to arbitrage are higher, the return predictability of delta fluctuations becomes more prominent.

PRESENTER Yuan Lu, The Chinese University of Hong Kong

DISCUSSANT Ai Jun Hou, Stockholm University

CLOSING

FRIDAY
12:15 to 12:30

Paper Award and Closing Remarks
Adrian Fernandez-Perez, Auckland Centre For Financial Research

WF710

FRIDAY
12:30 to 13:30

LUNCH

WF8 Lounge

END OF DAY TWO



Editors:

Adrian Fernandez-Perez, Auckland University of Technology, New Zealand

Alireza Tourani-Rad, Auckland University of Technology, New Zealand

B-ranked on the ADBC Journal ranking list (<https://abdc.edu.au/research/abdc-journal-list/>)

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**AUCKLAND CENTRE FOR
FINANCIAL RESEARCH**

AUT

Thank you for joining us
Haere rā



The New Zealand Tui is considered one of the greatest singers of the forest!

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