FernUniversität in Hagen

3rd Structured Retail Products and Derivatives Conference

May 28–30, 2026
Hagen

We are looking forward to an interesting conference and welcome you to Hagen!

Rainer Baule David Shkel

3rd Structured Retail Products and Derivatives Conference Organizing Committee

Contents

Welcome **5**

Keynote Speaker **7**

Timetable **9**
Thursday, May 28, 2026 9
Friday, May 29, 2026 9
Saturday, May 30, 2026 10

Book of Abstracts **11**
Friday, May 29, 2026 11
Sessions A1+A2: 09:00–10:30 11
Sessions B1+B2: 11:00–12:30 15
Sessions C1+C2: 15:00–16:30 19
Saturday, May 30, 2026 23
Sessions D1+D2: 09:00–10:30 23
Sessions E1+E2: 11:00–12:30 27

List of Participants **31**

Locations **33**

Useful Information **35**

Welcome

Dear colleagues, dear participants,

It is our great pleasure to welcome you to the 3rd Structured Retail Products and Derivatives Conference at FernUniversität in Hagen.

Following two successful editions, this third conference continues our effort to establish a vibrant international platform for research on derivatives, with a particular focus on structured retail products. Our aim is to bring together leading scholars from around the world to present new insights, discuss current challenges, and foster a deeper exchange of ideas in this important and evolving field.

The program reflects the breadth and dynamism of contemporary research. Topics range from pricing and valuation to market structure, regulation, and behavioral aspects of retail investors, as well as innovations in product design.

We are especially pleased to welcome Professor Claire Célérier as our keynote speaker, whose work in household finance will provide valuable perspectives for the discussions ahead. In addition, we are delighted by the high quality of submissions and the opportunity for selected papers to be published in a special issue of the Journal of Futures Markets.

We would like to express our sincere gratitude to all authors for their contributions. The great interest from participants across the globe serves as an incentive and motivation for us to make this conference a success.

We wish you an inspiring and productive conference, engaging discussions, and a pleasant stay in Hagen!

Rainer Baule and the Organizing Committee

Keynote Speaker

Professor Claire Célérier, Canada Research Chair in Household Finance, Associate Professor of Finance at University of Toronto's Rotman School of Management

"Household Preferences, Security Design, and Financial Stability"

Friday, May 29th, 2026, 13:30–14:30, Building 2, Rooms 4+5

Claire Célérier is the Canada Research Chair in Household Finance, Associate Professor of Finance at University of Toronto's Rotman School of Management. Claire's research explores how finance can benefit households, investigating the role of innovation, regulation, and institutional design.

She addresses these questions taking different perspectives, from behavioral economics, to asset pricing and history. Her work has been published in refereed academic journals, including the Quarterly Journal of Economics, Journal of Finance and Review of Financial Studies, and has raised the interest of several medias, central banks and regulators around the world.

Timetable

Thursday, May 28, 2026

19:00–23:00	Get-together	Villa (Building 10)

Friday, May 29, 2026

From 8:30	Registration	Bldg. 2
8:45–9:00	Welcome Address	Bldg. 2, Room 4+5
9:00–10:30	Parallel Sessions A	
	A1: Retail Options A2: Option Markets and Stock Returns	Bldg. 2, Room 4+5 Bldg. 2, Room 6
10:30–11:00	Coffee break	Bldg. 2
11:00–12:30	Parallel Sessions B	
	B1: Structured Products B2: Alternative Assets	Bldg. 2, Room 4+5 Bldg. 2, Room 6
12:30–13:30	Lunch	Mensa (Bldg. 4)
13:30–14:30	Keynote Address *Household Preferences, Security Design, and Financial Stability* Professor Claire Célérier	Bldg. 2, Room 4+5
14:30–15:30	Coffee break	Bldg. 2
15:30–17:00	Parallel Sessions C	
	C1: Option Returns and Risk Premia C2: ETFs and Futures	Bldg. 2, Room 4+5 Bldg. 2, Room 6
19:00–22:00	Conference dinner ARCADEON, Lennestraße 91, 58093 Hagen	ARCADEON

Saturday, May 30, 2026

From 08:30	Registration	Bldg. 2
09:00–10:30	Parallel Sessions D	
	D1: Option Market Making D2: AI and Machine Learning	Bldg. 2, Room 4+5 Bldg. 2, Room 6
10:30-11:00	Coffee break	Bldg. 2
11:00–12:30	Parallel Sessions E	
	E1: Option Returns and Intraday Trading E2: Option Pricing	Bldg. 2, Room 4+5 Bldg. 2, Room 6
12:30	Take-away lunch	Bldg. 2

Friday, May 29, 2026

Sessions A1+A2: 09:00–10:30

Session A1: Retail Options

May 29, 2026, 09:00–10:30, Building 2, Room 4+5

Chair: ***Edna Lopez Avila***

Who benefits from the European options markets? Performance of options trading

Caroline Le Moign

Paris 1 Pantheon Sorbonne

This paper provides the first comprehensive analysis of investor performance in European equity and index options markets using a novel, transaction-level dataset under the MiFIR framework. We identify the ultimate economic principals—including a precise classification of retail investors—across the European Economic Area in 2023. We document new stylized facts regarding retail participants and analyze their trading outcomes using mark-to-market returns. Our findings contribute to the debate on trading "gamification" and provide evidence for regulators evaluating the welfare implications of expanded retail access to complex financial instruments in Europe.

Investment targets as reference points

Aleksi Pitkäjärvi [1]***; Matteo Vacca*** [2]***; Petra Vokata*** [3]

[1] Vrije Universiteit Amsterdam and Tinbergen Institute
[2] Hanken School of Economics
[3] Ohio State University and CEPR

We provide the first evidence of forward-looking reference points in investor behavior. Combining administrative data on option traders with a stacked difference-in-differences design, we show that investors' propensity to sell options spikes precisely when the underlying asset crosses the strike price, which retail investors frequently select to match their target price. The effect is difficult to explain using the standard disposition effect, nominal returns, salience, option Greeks, or complex option trading strategies. The evidence is most consistent with investors evaluating gains and losses relative to a forward-looking target, in sharp contrast with the backward-looking purchase price widely used in the disposition effect literature. Our findings help reconcile conflicting empirical evidence on investors' reluctance to realize losses.

Low-Leverage Option Betting

Edna Lopez Avila

University of Western Ontario

Little is known about how retail investors choose leverage when trading options. Using a comprehensive equity options database, I show that a large share of individual investors' dollar investment concentrates in low leverage In the Money (ITM) options. This pattern departs from the conventional view that retail traders primarily seek lottery like payoffs through Out of the Money (OTM) options. Instead, investors favor short maturity ITM options to gain exposure to high priced stocks, whereas OTM options are mainly used at longer maturities and in small cap meme stocks. ITM options are perceived as offering smaller but more consistent payoffs, even though they generate persistent losses. This behavior is consistent with investors' cash constraints and risk tolerance, reflecting habitat-based preferences.

Session A2: Option Markets and Stock Returns

May 29, 2026, 09:00–10:30, Building 2, Room 6

Chair: ***Lykourgos Alexiou***

Volatility-of-Volatility aligned uncertainty and return predictability

Te-Feng Chen [1]***; Ji-Chai Lin*** [2]***; Longfei Shang*** [3]***; Xingfu Xu*** [1]***; Rochen Yin*** [1]

[1] Hong Kong Polytechnic University
[2] National Central University
[3] Southwestern University of Finance and Economics

We propose a novel approach to forecasting market returns by constructing economic uncertainty indices aligned with volatility-of-volatility (VOV). We employ the partial least squares (PLS) method to synthesize information from economic policy uncertainty (EPU) indices and macro-financial uncertainty measures into indices that best predict future VOV. This VOV alignment significantly enhances return predictability, delivering out-of-sample R^2 up to 13% for U.S. equities and generating substantial economic gains for mean-variance investors. Predictability extends beyond equities to hedge fund returns (R^2 up to 18.3%) and global markets (up to 18.7%). Our results clarify which uncertainty components—such as financial uncertainty, sovereign debt crises, and regulatory risk—drive predictive power, offering an interpretable and theoretically grounded tool for improving asset allocation across diverse asset classes and geographies.

Commonalities in firm-level implied volatilities

Mykola Babiak [1]***; Jozef Barunik*** [2]***; Mattia Bevilacqua*** [3]***; Michael Ellington*** [3]

[1] Lancaster University Management School
[2] Institute of Economic Studies, Charles University
[3] University of Liverpool

We decompose firms' implied volatility into upside and downside measures that link with the expectation of upward and downward price movements. We show that the cross-section of implied volatilities and their components obey a strong factor structure. We define common implied volatility factors as the cross-sectional average of individual implied volatilities and demonstrate that shocks to common downside implied volatility are priced strongly. Specifically, stocks in the lowest downside implied volatility beta quintile earn average annualized risk-adjusted returns 8.52% higher than those in the highest quintile. The common downside implied volatility factor also helps explain several asset pricing anomalies.

Analyst tipping: new evidence from directional options trading volume and finra rule 2241

Lykourgos Alexiou [1]***; Mattia Bevilacqua*** [2]***; Zacharias Petrou*** [3]

[1] University of Edinburgh Business School
[2] University of Liverpool Management School
[3] Cyprus University of Technology

We study the predictive information content of directional options trading volume for stock returns following analyst recommendations. We observe that options volume related to open buy positions is particularly informative on the day before the recommendation announcement, in line with the prevailing tipping hypothesis. Moreover, following the implementation of FINRA Rule 2241 in December 2015, aimed at curtailing tipping practices, our difference-in-differences approach reveals the curbing of analyst tipping in subsequent years. Our findings remain robust across sub-samples, additional placebo and falsification tests, and after accounting for several control variables.

Sessions B1+B2: 11:00–12:30

Session B1: Structured Products

May 29, 2026, 11:00–12:30, Building 2, Room 4+5

Chair: ***Jieyu Wang***

A Monte Carlo study of optimal investment in leverage products

Patrick Kerl*; *Marc Oliver Rieger

University of Trier

All leverage products enable investors to engage in both hedging and speculation. Despite this, different types of leverage product exist. Using Monte Carlo methods, we model the investment decision between the three main types of leverage product - warrants, mini-futures and factor certificates. We consider investors with different expectations of the underlying's price dynamics, and with either hedging or speculation as motive. We find that warrants are preferable for hedging in all situations where it is applicable. For speculators, both warrants and factor certificates are sometimes preferred, with this being primarily determined by the investor's expectation of the underlying's price dynamics. Mini-futures are never strongly preferred.

The best of both worlds? Comparative framing in the perception of structured financial products

Marc Oliver Rieger [1]**; *Martin Wallmeier*** [2]

[1] University of Trier
[2] University of Fribourg

We conduct an experiment to investigate which reference points investors use to evaluate the performance of structured financial products from an ex-post perspective, and how this choice affects the perceived ex-ante attractiveness of the products. We hypothesize that investors' reference points are context-dependent and vary with the realized payoff: when the payoff is in the upward sloping region of the payoff profile, investors tend to compare it to stocks; when it is in the flat region, they tend to compare it to bonds. This comparative framing can create the impression that structured products offer the best of both worlds - combining features of equity and bond investments - which may help explain the popularity of barrier reverse convertibles.

Retail derivatives sentiment and stock returns

Jieyu Wang [1]***; Neil Pearson*** [2]***; Qi Zhang*** [1]

[1] Shanghai Jiaotong University
[2] University of Illinois at Urbana-Champaign

Issuance volumes of retail structured equity products (SEPs) predict negative returns on the SEPs' underlying stocks. A limitation of this finding is that each month the number of unique underlying stocks is typically only about 100; thus, each month SEP issuances predict the returns of only about 100 stocks. We extend the predictions to the full cross-section of stocks by training large language models to use news headlines to predict a SEP-based measure of sentiment, and then compute the extrapolated sentiment measure for all stocks. The extrapolated sentiment measure is a strong predictor of stock returns.

Session B2: Alternative Assets

May 29, 2026, 11:00–12:30, Building 2, Room 6

Chair: ***Balasubramaniam Swaminathan***

Monitoring EU ETS carbon price uncertainty

Robinson Kruse-Becher

University of Hagen

Carbon price uncertainty plays a crucial role for expected decarbonization investments, see Fuchs, Stroebel and Terstegge (2024). Previous work documents high levels of uncertainty in the European Emissions Trading System with pronounced time-variation and peaks associated with events related to climate policy adjustments. We investigate real-time monitoring procedures for level shifts in the option-based EU emission allowances Carbon VIX measure around six major events. Timely detection of such shifts is relevant to decisions of firms, policy makers and investors. The results suggest that in the majority of cases, the classic CUSUM approach can be remarkably outperformed by using fractional integration in combination with (stacked backward) CUSUM methods. The detection can be improved by seven weeks on average in these cases.

Market efficiency in prediction markets - a comparison with derivatives

Michele Fabi [1]***; Roberto Marfe*** [2]***; Vittorio Ruffo*** [3]***; Lorenzo Schoenleber*** [2]

[1] Telecom Paris
[2] Collegio Carlo Alberto, University of Turin
[3] Frankfurt School of Finance & Management

We study pricing efficiency in decentralized prediction markets by comparing market-implied probabilities from Polymarket with benchmarks derived from option-implied risk-neutral distributions extracted from the derivatives market. We study Bitcoin prediction bets and find that, although Polymarket prices broadly track option-implied benchmarks, they show systematic mispricing driven by complexity, behavioral factors, and market frictions. Mispricing is most pronounced in tail events, during periods of high volatility, major macroeconomic shocks, and reflects the influence of sentiment, attention, and blockchain-specific risks. These results reveal both efficiency and behavioral distortions in prediction markets.

Inelastic by design: Institutional constraints and funding wedges in perpetual futures

Balasubramaniam Swaminathan

NEOMA Business School

Perpetual futures markets exhibit persistent funding wedges that violate frictionless benchmarks, suggesting structural impediments to market adjustment. We study this via yield-bearing stablecoins, which maintain stability by holding collateral and hedging risk through offsetting short positions. This design creates an institutional limit to arbitrage: short positions are structurally embedded rather than discretionary, and redemptions face protocol-imposed delays. We develop a model where funding wedges persist because the short side is sticky by design. The model predicts a two-stage basis adjustment at announcement and execution, a pattern confirmed using Ethena's USDe. Unstaking requests trigger immediate on-chain responses followed by realized effects after a seven-day cooldown. Sensitivity intensifies 11.4-fold when funding turns negative, creating procyclical feedback loops comparable to institutional equity trade price pressure.

Sessions C1+C2: 15:00–16:30

Session C1: Option Returns and Risk Premia

May 29, 2026, 15:00–16:30, Building 2, Room 4+5

Chair: ***Niklas Wasielewski***

Short-term market reversals and the S&P 500 index option returns

Matti Suominen; Akseli Kajander

Aalto University

The S&P 500 index futures' return reversals imply a trading cost to writers of hedged S&P 500 index options, who re-balance their delta-hedges. Due to a positive gamma in options, option writers, who rebalance their hedges frequently, end up continuously buying high and selling low. S&P 500 index futures' daily return reversals are larger in illiquid markets. In line with the demand based-option pricing theory, and limits of arbitrage, the returns to writing unhedged straddles are more positive, and the returns to straddle replicating portfolios (are more negative, when the futures market is illiquid. besides illiquidity, measures of futures' short-term return reversal, and the option market makers' gamma explain written straddle returns, and the returns to straddle replicating portfolios.

Early birds get the vol: morning volatility uncertainty and variance risk premium

Rodrigo Hizmeri; Mattia Bevilacqua

University of Liverpool

We document that morning volatility-of-volatility (VVIX), measured at 10:00 EST during the U.S.–European market overlap, strongly predicts next-day variance asset returns. Predictive power peaks with t-statistics reaching 5.6 and adjusted R^2 of 2.6%, but diminishes after 11:00 EST. Trading strategies exploiting this pattern generate Sharpe ratios exceeding 2.0, remaining economically meaningful even after transaction costs. Crucially, intraday returns display a flat relationship with morning VVIX on high volatility uncertainty days, while close-to-close returns exhibit strong predictability. These findings are difficult to reconcile with standard risk premium theories but are consistent with limited attention and slow-moving beliefs about volatility.

Overreaction in implied volatility jumps

Rainer Baule; Niklas Wasielewski

University of Hagen

We examine jumps in implied volatility of equity options. Based on single stock options in the US market from 1996 to 2023, we find that on average such jumps represent an overreaction of the market. This conclusion is based on two observations: First, the realized volatility risk premium (implied minus realized volatility) rises to a significantly abnormal level after a volatility jump. This methodology uses Black-Scholes implied volatilities. However, second, also (model-free) delta-hedged option returns rise to abnormally high levels after volatility jumps.

Session C2: ETFs and Futures

May 29, 2026, 15:00–16:30, Building 2, Room 6

Chair: ***Wen Chen***

From index trackers to risk managers: the expanding role of derivatives in ETFs

Aneel Keswani [1]***; Xiao Xiao*** [2]***; Yue Zhang*** [1]

[1] Judge Business School, University of Cambridge
[2] Bayes Business School, City University of London

Using regulatory data from the SEC's N-PORT filings, we provide the first systematic study of derivative use by exchange-traded funds (ETFs). Over 50% of ETFs use derivatives, with greater derivative weight and exposure than mutual funds. Passive ETFs primarily use futures and forwards for index tracking cheaply, while active ETFs rely on options strategies to reshape risk profiles. Despite charging higher fees, active derivative-using ETFs attract more flows and exhibit reduced fee sensitivity. We show that these flows are driven by superior downside protection, a benefit investors appear to value. However, this improved risk profile comes at the hidden cost of limited upside participation. Our study highlights the strategic role of using derivatives in ETF market competition.

Corporate bond futures impact on corporate bond yields, liquidity, and ownership

Ali Nejadmalayeri [1]***; Siamak Javadi*** [2]***; William Campbell*** [1]

[1] University of Wyoming
[2] University of Texas Rio Grande Valley

We study how corporate bond index futures reshape pricing, liquidity, and ownership in one of the most illiquid asset classes. Using the 2018 launch of iBoxx investment-grade and high-yield futures, we examine the joint effects of index inclusion and futures trading on yield spreads, trading activity, and investor composition. Index inclusion significantly reduces credit spreads—especially for speculative-grade bonds—consistent with lower liquidity and segmentation premia. The introduction of futures further compresses spreads by 35–55 basis points and modestly improves liquidity. Most importantly, futures trading reallocates ownership: mutual funds reduce cash bond holdings, while life and property-casualty insurers increase theirs. Futures enable liquidity-demanding investors to substitute synthetic exposure for costly cash-market trading, shifting risk-bearing toward long-horizon institutions.

Magnet effect of position limits on commodity futures

Wen Chen [1]***; Bo Hu*** [2]***; Yajun Wang*** [3]

[1] Texas Tech University
[2] George Mason University
[3] Baruch College, CUNY

Position limits in commodity futures can generate an unintended magnet effect when traders are non-competitive and have both speculative and hedging motives. A position limit can induce financial traders to optimally trade at the limit even when unconstrained demand would not bind. When limits apply to a subset of traders, binding reduces effective competition, raises price impact, lowers aggregate demand, and depresses futures prices, making binding privately beneficial, especially when hedging motives dominate. When limits apply to all traders, aggregate demand becomes inelastic and suppliers drive prices; with sufficiently speculation-driven trading, binding attenuates adverse selection, induces more aggressive supply, and leads to lower prices and a magnet effect. The effect is stronger in less competitive markets, highlighting unintended regulatory consequences.

Saturday, May 30, 2026

Sessions D1+D2: 09:00–10:30

Session D1: Option Market Making

May 30, 2026, 09:00–10:30, Building 2, Room 4+5

Chair: ***Thomas Kokholm***

Robinhood's Forced Liquidations

Diego Amaya [1]***; Pedro Angel Garcia Ares*** [2]***; Neil D. Pearson*** [3]***; Aurelio Vasquez*** [2]

[1] Wilfrid Laurier University
[2] ITAM
[3] University of Illinois at Urbana-Champaign

Shortly before expiration, Robinhood submits trades to close out the options positions of its customers who do not have the cash or shares to exercise their options or accept assignment. These liquidations result in bursts of customer trades at known times, and allow us to identify the underlying symbols and options positions popular with Robinhood customers. The liquidating trades face adverse execution, as options prices move in unfavorable directions. Underlying equity and ETF prices move in directions consistent with price pressure in the equity and ETF markets as options market makers execute delta hedge trades as they absorb the Robinhood order flow. Our results reveal how brokerage frictions in retail options trading impact options and underlying prices.

The impact of early option exercise on ex-dividend stock returns

Lennart Sperling; Sebastian Schlie

University of Hagen

We revisit the well-documented stock return anomaly around ex-days and establish a novel link to early exercise of equity options. We show that clustered exercise of in-the-money call options on the last cum-day is associated with substantially lower stock returns on the subsequent ex-day, amounting to a 6.4 bps decrease in returns per one standard deviation increase in our early-exercise measure. This finding is consistent with the rationale that call owners who exercised their options sell the delivered shares after capturing the dividend. Price pressure is amplified when dividend yields, and thus incentives to capture the dividend, are high, and attenuated when options market liquidity allows positions to be unwound through offsetting trades or when the ex-day follows a weekend.

A model for the hedging impact of option market makers

Sebastian Egebjerg; Thomas Kokholm

Aarhus University

We propose a model for the price impact of Option Market Makers' (OMMs) delta hedging. Extending prior theoretical work that focuses on gamma effects, we introduce an additional inventory channel that captures hedging responses to changes in option positions. Even when the stock's fundamental value has constant drift and volatility, hedging-induced impact generates stochastic volatility and drift in prices. Analyzing gamma effects in isolation understates impact when inventory adjustments reinforce gamma hedging and overstates it when they offset it. Using high-frequency SPX option data, we show that changes in OMMs' net option positions predict subsequent futures returns. Decomposing net delta changes into gamma and inventory components reveals that both are statistically significant and affect prices in line with model predictions.

Session D2: AI and Machine Learning

May 30, 2026, 09:00–10:30, Building 2, Room 6

Chair: ***Yizhen Xie***

Liquid factor models

Dale Rosenthal

Morgan Stanley/Parametric

We propose factor models using low-cost liquid hedging instruments to yield directly-actionable hedges. We combine liquid instruments to create less-correlated liquid factors and introduce an estimation method to handle multicollinearity and stabilize estimates. Analyzing the universe of US-listed ETFs shows that liquid factor models have explanatory power similar to or exceeding other factor models, yield more stable coefficients out-of-sample, may reduce rehedging and costs, and that these benefits are relatively stronger for significant coefficients and out to at least one quarter. These benefits hold for diverse asset classes and some foreign assets. This suggests liquid factor models let us cheaply alter factor exposures, especially for large portfolios; work across asset classes; and, may help better estimate fund alphas.

Extreme volume spikes, inelastic order flow and competition for liquidity provisioning

Shubhankar Mishra; Sobhesh Kumar Agarwalla; Anirban Banerjee

IIM Ahmedabad

We examine why the expiry-day “high-volume, high-spread” anomaly need not arise in LOB markets, where liquidity provision is competitive. We argue that when arbitrageurs face time-critical unwinding pressure near expiry, they may act as both liquidity demanders and aggressive liquidity suppliers. Using trader-group-level data, we show that during the settlement window, agency algorithmic traders (AATs) submit aggressive limit orders and displace proprietary algorithmic traders (PATs) from queue priority, preventing liquidity deterioration despite elevated order-flow volatility. Effects are strongest in arbitrage-prone stocks. Exploiting a regulatory shift from cash to physical settlement, we employ a staggered DiD design and show that elevated expiry-week delivery margin lowers AAT activity and reinstates PATs as primary liquidity suppliers, enhancing market stability but harming liquidity.

AI and demand-based option listing

Yizhen Xie

Carnegie Mellon University

This paper shows that AI-based option listings enhance trading volume by aligning strikes with demand. Over 80% of option listings see zero or one contract traded daily, contributing to options' high bid-ask spreads—an order of magnitude higher than stocks. In August 2022, Nasdaq began optimizing strikes using AI volume predictions. Using options transaction data, I find that Nasdaq's demand-based listings increase trading volume relative to conventional grid-based listings using a difference-in-differences design. I develop a model where an exchange chooses listings to maximize volume while market makers bear inventory risk, showing that AI-based listings improve allocative efficiency by matching strike availability with investor demand.

Sessions E1+E2: 11:00–12:30

Session E1: Option Returns and Intraday Trading

May 30, 2026, 11:00–12:30, Building 2, Room 4+5

Chair: ***Carlo Sala***

Intraday volatility surface geometry and rebalancing premia in options

Daniil Gerchik

Frankfurt School of Finance & Management, Deutsche Bundesbank

Intraday option prices exhibit predictable variation linked to the cross-strike geometry of the implied-volatility smile. I show that local smile features and cross-strike dislocations forecast subsequent short-horizon returns on delta-neutral option portfolios, while carrying little information about contemporaneous stock returns. The return predictability is concentrated late in the trading day and is stronger when trading frictions are more severe, consistent with limits to arbitrage and intermediary rebalancing across strikes. I introduce intraday measures of smile dislocation—deviations from a smooth benchmark—that serve as state variables for short-horizon option premia. The findings highlight an intraday rebalancing premium in equity options and are relevant for the intraday hedging and mark-to-market of option-linked products with smile exposure.

High-Frequency Option Predictability

Christine Bangsgaard; Sebastian Egebjerg

Aarhus University

We study the high-frequency predictability of S&P 500 index option returns using trade and quote data combined with machine learning methods. Our models achieve substantial out-of-sample predictive power, with median R^2 around 20% and directional accuracy above 53% across our sample period. Predictability is concentrated in out-of-the-money and less liquid options, is stronger toward the end of the trading day, and quickly disappears beyond a few minutes. The most important predictors include short-term past returns and implied volatility, alongside microstructure variables such as bid-ask spreads and order-flow imbalances. Overall, the results document consistent short-term predictability in SPX options, driven by market microstructure, which is unlikely to yield exploitable trading strategies.

Does option volume convey incremental information? Evidence from synthetic stock benchmarks

Carlo Sala [1]***; Luis Goncalves*** [2]

[1] ESADE Business School
[2] UNSW

If option volume conveys incremental information, it should forecast the spread between actual and synthetic (option-implied) stock returns—not just actual returns. We test this implication around earnings announcements, material event filings, and week-by-week throughout the calendar, and find that both signed and unsigned volumes consistently fail to predict the spread. When predictability appears, it is statistically weak, economically negligible, or reverses sign. A noisy rational expectations model with informed trading across the stock and options markets yields this testable implication. By not benchmarking against synthetic returns, prior studies likely overstated the informational content of option volume.

Session E2: Option Pricing

May 30, 2026, 11:00–12:30, Building 2, Room 6

Chair: ***Lennart Dröge***

Eliciting the private signal distribution from option prices

Julio A. Crego

Nova SBE

I provide a theoretical framework that characterizes which option strike an informed agent buys or sells after a given signal. The informed agent faces a trade-off between higher exposure to the asset or a more favorable price for the option. In equilibrium, he implements a mixed strategy across strikes to camouflage himself as a noise trader. However, he only considers strikes within a segment of the strike line. This segment depends on the realization of the private signal. As a result, there is a one-to-one mapping between the asset distribution conditional on each possible signal realization and the price slope. Additionally, the model suggests that market makers can make the losses of noise traders independent of the private signal realization.

Pricing Contingent Claims under the Real-World Measure: New Frontiers for the DCF-Method

Mike Felpel [1]**;** ***Lutz Hahnenstein*** [2]

[1] HDI/Talanx Group
[2] Ampega Asset Management GmbH

This paper develops a general arbitrage-free framework for pricing contingent claims under the real-world measure. Using a highly flexible non-recombining binomial tree, we derive a novel pricing kernel representation that links real-world and risk-neutral probabilities pathwise. We establish new closed-form multi-period versions of the certainty-equivalent and risk-adjusted discount-rate approaches, with the classical Discounted Cash Flow (DCF) method emerging as a special case. A central insight is that deterministic discount rates are valid only for claims with linear exposure to the numéraire return. For nonlinear payoffs traditional beta-based discounting induces systematic, economically material mispricing. The framework clarifies the conceptual links between risk-neutral, kernel-based, certainty-equivalent, and cost-of-capital valuation, and precisely delineates the proper domain of risk-adjusted discounting in valuation practice.

Pricing barrier options in discontinuous markets: An adaptive step Monte Carlo approach

Lennart Dröge [1]***; Jos van Bommel*** [2]

[1] University of Augsburg
[2] Université du Luxembourg

Continuous pricing models neglect significant overnight jumps. To price this ”gap risk” efficiently, we introduce two novel simulation techniques, the Adaptive Step by Knock-out Probability and Adaptive Step by Overshooting Return, which dynamically adjust time steps based on the asset’s proximity to the barrier. We validate these algorithms by pricing down-and-out calls under a hybrid diffusion-jump process. Results confirm our methods achieve high-frequency precision with drastically reduced computational load compared to fixed-step simulations. Empirically, we demonstrate that neglecting gap risk causes systematic undervaluation, with our model correctly capturing premiums near the barrier that can exceed theoretical benchmarks by a factor of two.

List of Participants

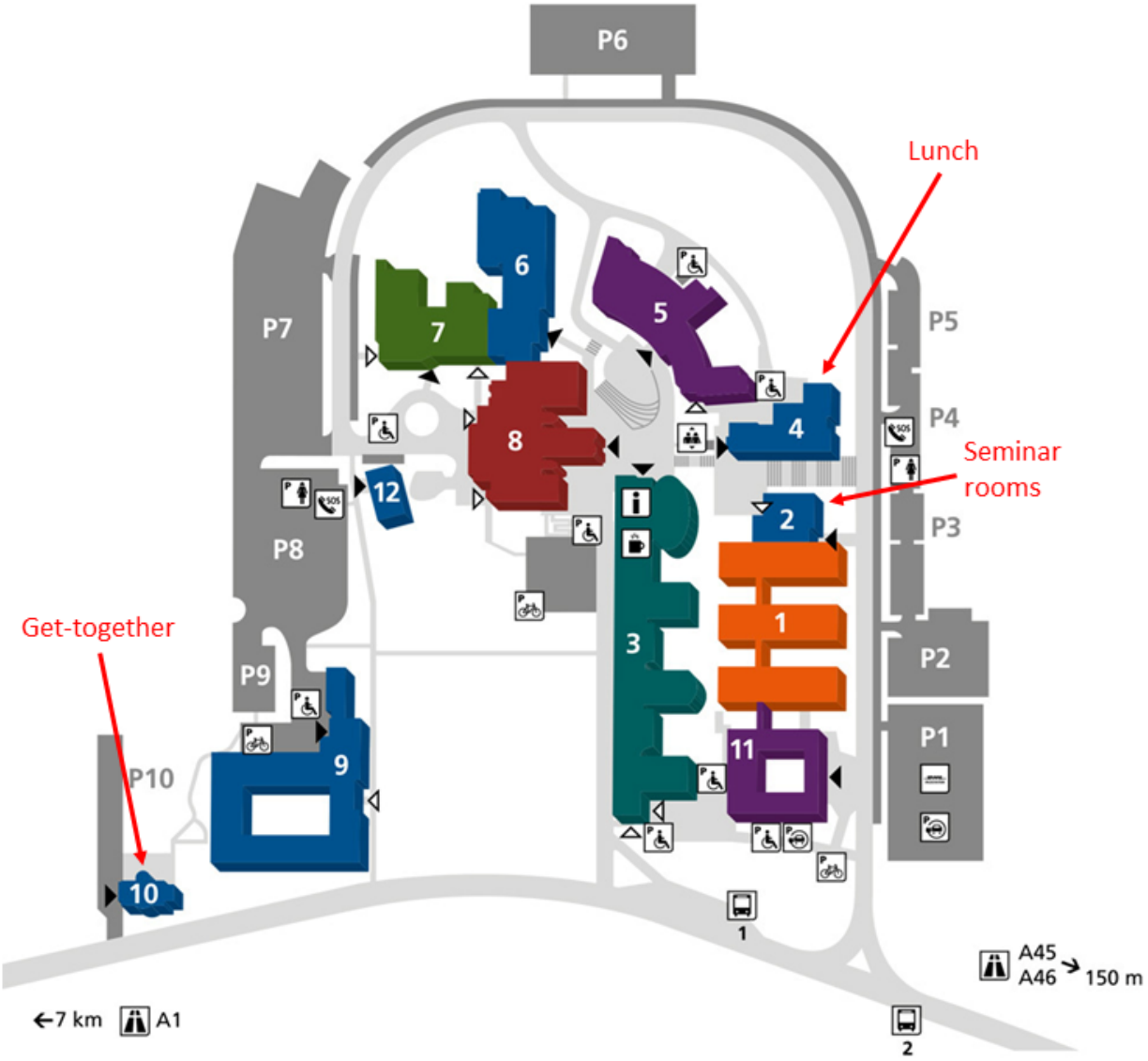
Name	Institution	Session
Alexiou, Lykourgos	University of Edinburgh	A2
Banerjee, Anirban	IIM Ahmedabad	D2
Baule, Rainer	University of Hagen	C1
Bevilacqua, Mattia	University of Liverpool	A2, C1
Borchard, Florian	University of Hagen	
Chen, Te-Feng	Hong Kong Polytechnic University	A2
Chen, Wen	Texas Tech University	C2
Crego, Julio A.	Nova SBE	E2
Dröge, Lennart	Universität Augsburg	E2
Egebjerg, Sebastian	Aarhus University	D1, E1
Entrop, Oliver	University of Passau	
Garcia Ares, Pedro Angel	ITAM	D1
Gerchik, Daniil	Deutsche Bundesbank	E1
Hahnenstein, Lutz	Ampega Asset Management GmbH	E2
Hizmeri, Rodrigo	University of Liverpool	C1
Kerl, Patrick	Unversität Trier	B1
Kokholm, Thomas	Aarhus University	D1
Kruse-Becher, Robinson	University of Hagen	B2
Le Moign, Caroline	Paris 1 Pantheon Sorbonne	A1
Lopez Avila, Edna	University of Western Ontario	A1
Nejadmalayeri, Ali	University of Wyoming	C2
Pitkäjärvi, Aleksi	Vrije Universiteit Amsterdam	A1
Quaas, Felix	University of Hagen	
Rosenthal, Dale	Morgan Stanley/Parametric	D2
Rosenthal, Philip	Fachhochschule Dortmund	
Ruffo, Vittorio	Frankfurt School of Finance and Management	B2
Sala, Carlo	ESADE Business School	E1
Shkel, David	University of Hagen	
Sperling, Lennart	University of Hagen	D1
Suominen, Matti	Aalto University	C1
Swaminathan, Balasubramaniam	NEOMA Business School	B2
Wallmeier, Martin	University of Fribourg	B1
Wang, Jieyu	Shanghai Jiao Tong University	B1
Wasielewski, Niklas	University of Hagen	C1
Xiao, Xiao	University of Cambridge	C2
Xie, Yizhen	Carnegie Mellon University	D2

Locations

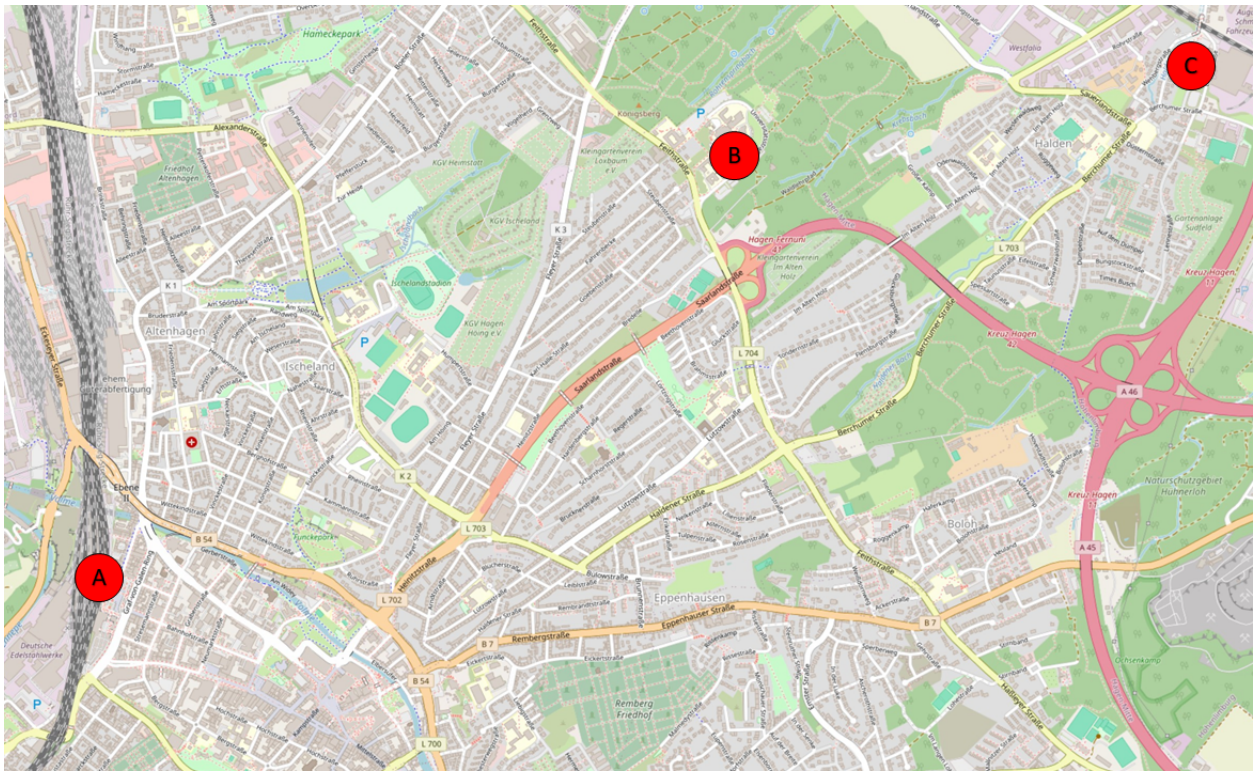
Venue

The conference site is the main campus of the FernUniversität in Hagen (University of Hagen), Universitätsstraße 47, 58097 Hagen, Germany. It can be reached from Hagen main station in 17 minutes by bus lines 515 and 540 (bus stop “FernUniversität”). There are also plenty of free parking spaces available. The nearest parking lots for the conference are P3 to P5.

The conference center, including the registration desk, is located in Building 2, where all presentations will also take place. Lunch on Friday will be served in Building 4, and the get-together on Thursday will be held in Building 10.



Map



A Hagen main train station:
Berliner Platz, 58089 Hagen

B FernUniversität (conference venue):
Universitätsstraße 47, 58097 Hagen

C Arcadeon (conference dinner):
Lennestraße 91, 58093 Hagen

Useful Information

Getting around in Hagen

Local **bus services** are operated by Hagener Straßenbahn AG.

General timetable information (German only): www.hst-hagen.de/fahrplan

The cost for a single ticket is 3.80 €. The ticket can be bought from the bus driver or online with the Deutsche Bahn App. The “Deutschlandticket” is also valid on public buses in Hagen. It is mandatory to present your ticket to the driver upon boarding. Please make sure to arrive a few minutes ahead of schedule as public buses sometimes depart one or two minutes early.

For **taxi services**, please refer to page 39.

How to get to the main campus (and back)

The bus stop at the conference venue is “FernUniversität”.

From Hagen main station

The bus station is located in front of the train station.
Line 540 departs from bus platform 6, Line 515 from platform 3.

Bus	Direction	Departure	Arrival	Days
540	FH-FernUni	08:09	08:23	Fri
515	Hohenlimburg	08:21	08:39	Fri, Sat
540	FH-FernUni	08:40	08:51	Fri
515	Hohenlimburg	08:51	09:09	Fri, Sat

Line 540 (“Campus Express”) is an express bus with only a few stops, while Line 515 stops at locations near all downtown hotels.

From Bildungsherberge

The bus stop “Deutsches Rotes Kreuz” is located in front of the Bildungsherberge.

Bus	Direction	Departure	Arrival	Days
534	Boele Markt	08:02	08:06	Fri, Sat
527	Loxbaum	08:17	08:21	Fri, Sat
534	Boele Markt	08:32	08:36	Fri, Sat
527	Loxbaum	08:47	08:51	Fri, Sat

From the main campus to Hagen main station on Saturday

Get on the bus at the bus stop “FernUniversität” in front of the Campushotel (opposite the campus).

Bus	Direction	Departure	Arrival
515	Südufer Hengstey	12:48	13:05
515	Südufer Hengstey	13:18	13:35

How to get to the conference dinner

By car

ARCADEON (Lennestraße 91, 58093 Hagen) is approximately an 8-minute drive from the campus. Public parking is available.

By bus

At 18:39, board bus 515 toward “Hohenlimburg Bf” at the “FernUniversität” stop opposite the Campushotel (on the campus side). Get off at the “ARCADEON” stop. The journey takes 13 minutes. From there, it is a five-minute walk along Lennestraße.

Walking

ARCADEON can be reached in about 35 minutes on foot (2.5 kilometres) via a leisurely downhill walk through the woods. A guided walk will start from the Campushotel at 18:20.

Parking

At the main campus, parking is for free (see campus map on page 33).

Registration

The reception desk is located in Building 2 and will be open from 8:30 on Friday and Saturday. In addition, registration will also be available at the get-together on Thursday evening, which will take place in the Villa (Building 10) from 19:00.

Paper Sessions

Each presentation is allocated a 30-minute slot, consisting of 20 minutes for the presentation and 10 minutes for discussion. Sessions are chaired by the final presenter of each session.

Computers will be provided for presentations. Speakers are asked to bring their slides on a USB memory stick and upload them prior to their respective sessions.

Special Issue Journal of Futures Markets

A special issue of the Journal of Futures Markets is dedicated to the conference. Presenters are invited to submit their papers to this special issue. The submission window will open shortly after the conference. All submissions will go through the journal’s standard review process. Further information will be sent to all presenters via email.

Food and Beverages

Coffee Breaks

Coffee breaks are offered in the open space in front of the seminar rooms in Building 2. On both conference days, coffee, tea, cold beverages, and some small snacks are available.

Lunch

Lunch on Friday is served in the Mensa (Bldg. 4), directly opposite the main conference building. You will find a voucher in your name badge.

On Saturday, a **take-away lunch** is offered in the open space in front of the seminar rooms in Building 2.

Get-together

On Thursday, all participants are invited to an informal get-together in the Villa (Building 10), starting at 19:00.

We will offer a barbecue, so be sure to come hungry!

Conference registration will also be available.

Parking is free of charge. The most convenient parking areas for reaching the Villa are P9 and P10. Please refer to the map on page 33.

Conference Dinner

The conference dinner will take place at ARCADEON. Information on how to get there can be found above (page 37).

Internet/Wi-Fi

Wi-Fi will be available during the conference throughout the campus via the eduroam network. Alternatively, you will find access data to the campus network of the FernUniversität in your name badge.

Taxi

At Hagen Main Station, there is a taxi stand where taxis wait for customers. After exiting the main entrance, turn left and follow the "Taxi" sign.

A small selection of taxi companies is:

Taxizentrale Hagen: +49 2331 22222, +49 2331 14014;

City-Car Taxi: +49 2331 61010.

A taxi from the campus to the train station costs approx. 15–20 €.

The registration desk will be happy to arrange taxi rides for you.

Uber

Uber is operating in Hagen. You can book a ride with the Uber app.

Photo credits

Titlepage: Dirk Matull
Page 5: Hardy Welsch
Page 7: private

Imprint

FernUniversität in Hagen
Fakultät für Wirtschaftswissenschaft
Lehrstuhl für BWL, insbes. Bank- und Finanzwirtschaft
Univ.-Prof. Dr. Rainer Baule
Universitätsstraße 41
58097 Hagen
Germany – Deutschland