

Prof. Barry Quinn

Professor of Finance and Financial Technology

Contact Information

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Research Profile Summary

Professor Barry Quinn is Professor of Finance & Financial Technology at Ulster University Business School and Director of the Centre for Finance and Responsible Technology. The Centre is guided by three pillars: statistical rigour and intellectual humility; practical industry relevance; and responsible algorithmic innovation.

Barry is a Chartered Statistician and views econometrics as an applied statistical science. His work combines applied econometrics and causal inference with trustworthy machine learning and computational approaches to address problems in financial markets and institutions, risk measurement, market integrity, and evidence for regulation and compliance. A core aim is to produce analysis that is transparent, reproducible, and auditable, and to keep conclusions proportionate to the strength of the evidence.

Before entering academia, Barry worked in financial markets, specialising in currency trading and liquidity management. He holds a PhD in Finance and an MSc in Artificial Intelligence from Queen's University Belfast. He actively collaborates with industry and policy partners to ensure his research delivers academic, societal, and public value.

Research Interests: AI applications in finance, causal AI, financial data science, market manipulation detection, systemic risk assessment, computational approaches to financial regulation, cooperative finance, sustainable finance, generative AI in capital markets.

Education and Professional Qualifications

Qualification	Institution	Year	Research Relevance
Ph.D. Finance	Queen's University Belfast	2012	Thesis: Cooperative Financial Institutions
MSc Quantitative Finance	RMIT University Melbourne	2006	Advanced derivatives and risk management
MSc Artificial Intelligence	Queen's University Belfast	2025	Deep learning, NLP, computer vision
Advanced Data Science Professional	Royal Statistical Society	2023	Professional recognition in data science

Qualification	Institution	Year	Research Relevance
Chartered Statistician	Royal Statistical Society	2019	Professional statistical expertise
B.Sc.(Hons) Accounting and Finance	Queen's University Belfast	1995	First Class Honours

Research Excellence

Publication Record

Fourteen peer-reviewed publications (1 ABS4, 11 ABS3s, 2 ABS2s), three commissioned research reports, and two statistical software packages.

Peer-Reviewed Publications

- Wang, Hui, Dai, Yongsheng, Spence, Ivor, Rafferty, Karen, Quinn, Barry, Huang, Ji (2025). TDSRL: Time Series Dual Self-Supervised Representation Learning for Anomaly Detection from Different Perspectives. *IEEE Internet of Things Journal*
- McKillop, Donal, Liu, Kailong, Quinn, Barry, Peng, Qiao (Forthcoming). Modelling and Predicting Credit Union Failures. *International Journal of Forecasting* (ABS3)
- Liu, Weilong, Zhang, Yong, Liu, Kailong, Quinn, Barry, Yang, Xingyu, Peng, Qiao (2024). Evolutionary Multi-Objective Optimisation for Large-Scale Portfolio Selection With Both Random and Uncertain Returns. *IEEE Transactions on Evolutionary Computation* (ABS4)
- Bouri, E., Quinn, B., Sheenan, L. & Tang, Y. (2024). Investigating extreme linkage topology in the aerospace and defence industry. *International Review of Financial Analysis* (ABS3)
- Quinn, Barry, Gallagher, Ronan, Kuosmanen, Timo (2023). Lurking in the shadows: The impact of CO2 emissions target setting on carbon pricing in the Kyoto agreement period. *Energy Economics* (ABS3)
- Liu, Jiadong, Papailias, Fotis, Quinn, Barry (2021). Direction-of-change forecasting in commodity futures markets. *International Review of Financial Analysis* (ABS3)
- Gallagher, Ronan, Quinn, Barry (2020). Regulatory own goals: The unintended consequences of economic regulation in professional football. *European Sport Management Quarterly* (ABS3)
- McKillop, Donal, French, Declan, Quinn, Barry, Sobiech, Anna L, Wilson, John OS (2020). Cooperative financial institutions: A review of the literature. *International Review of Financial Analysis* (ABS3)
- Quinn, Barry, Hanna, Alan, MacDonald, Fred (2018). Picking up the pennies in front of the bulldozer: The profitability of gilt based trading strategies. *Finance Research Letters* (ABS2)
- McKillop, Donal G, Quinn, Barry (2017). Irish credit unions: Differential regulation based on business model complexity. *The British Accounting Review* (ABS3)
- Ayadi, Rym, Naceur, Sami Ben, Casu, Barbara, Quinn, Barry (2016). Does Basel compliance matter for bank performance? *Journal of Financial Stability* (ABS3)
- Glass, J, McKillop, Donal, Quinn, Barry (2015). Modelling the Performance of Irish Credit Unions, 2002-2010. *Financial Accountability & Management* (ABS3)
- McKillop, Donal G, Quinn, Barry (2015). Web adoption by Irish credit unions: Performance implications. *Annals of Public and Cooperative Economics* (ABS2)
- Glass, J Colin, McKillop, Donal G, Quinn, Barry, Wilson, John (2014). Cooperative bank efficiency in Japan: a parametric distance function analysis. *The European Journal of Finance* (ABS3)

- Quinn, Barry, McKillop, Donal (2009). Internet banking and Irish credit unions. *International Journal of Cooperative Management* (ABS2)
- Quinn, Barry, McKillop, Donal (2009). Cost performance of Irish credit unions. *Journal of Cooperative Studies* (ABS2)

Software Publications

Table 2: Software Publications

Package	Year	Description
Time Series Econometrics (tsfe) (DOI: 10.5281/zenodo.6376113)	2022	R Package for time series analysis
Financial Machine Learning (fml) (DOI: 10.5281/zenodo.6376114)	2020	R Package for financial ML

Working Papers and Under Review

- Birem, AbderRaouf, Abidi Perier, Zineb, Quinn, Barry, Kearney, Fearghal. *Transformer-Based Sentiment Analysis for Stock Market Crash Risk*. Working paper.
- Dai, Yongsheng, Quinn, Barry, Kearney, Fearghal, Wang, Hui. *Amplifying Market Manipulation Detection Signals*. Working paper.
- Dai, Yongsheng, Quinn, Barry, Kearney, Fearghal, Liu, Weilong, Spence, Ivor, Rafferty, Karen, Wang, Hui (Submitted). *Detecting Market Manipulation with Dual-branch Self-supervised Learning: A Unified Framework Integrating Frequency-informed Anomaly Synthesis and Domain-Specific Features*. Submitted to *Information Processing and Management*. Manuscript IPM-D-25-06138.
- Zhang, Ying (Veronica), Quinn, Barry, Sheenan, Lisa (2025). *Ownership Dynamics, Risk and Regulation in Chinese Banking: New Evidence*. Centre for Responsible Banking & Finance Working Paper Series, WP No. 25-017.
- Kearney, Fearghal, Quinn, Barry, Pramanick, Abhishek (Under Review at Journal of Business Venturing). *Innovation Signals and Strategic Exits: How Technological Readiness Shapes Outcomes in Computational Approaches to Financial Regulation*.
- Hannon, James (Corresponding Author), French, Declan, Quinn, Barry, O'Hagan, Adrian (Submitted). *Geospatial modeling of vehicle crime in Northern Ireland using computer vision to identify environmental factors*. Submitted to *Insurance: Mathematics and Economics*. Manuscript IME-D-25-00419.
- Quinn, Barry (2025). *Hierarchical Flag Classification through Economic Domain Knowledge: A Vision Transformer Approach for Cultural Symbol Recognition*. MSc thesis and reproducible research codebase ([economic-flag-classification](#)), Queen's University Belfast; manuscript for journal submission in preparation.
- Quinn, Barry, Gallagher, Ronan. *Great Expectations: Managerial Turnover and Market Expectation in Association Football*.

Research Funding Track Record

Table 3: Research Grant Income

Source	Role	Start	End	People	Title	Full Economic Costs (£)	Type
(Department of the Economy NI)	PI	2025	NA	Pythilia Napier AI	Three PhD scholarships to support the Centre for Finance and Responsible Technology (including two collaborative doctoral partnerships)	£360,000	Research
(UK-Fin+/EP-SRC)	PI	2024	2025	Jesus Del Rincon Martinez Abhishek Pramanick Darren Burrows (CEO of Funds Axis)	Leveraging AI to understand and improve regulatory compliance in the Investment Management Industry	£100,000	Research
DofE CAST Award NI	Co-I	2023	NA	Declan French	Exploring the Welfare Cost of Cultural Displays in Northern Ireland using multimodal Generative AI	£70,000	Research
Innovate UK	PI	2022	2023	Lisa Sheenan Byron Graham	E.S.G fair value analytics platform: using state-of-the-art financial data science and business analytics to design a fair-value ESG prediction engine	£173,000	Research
Innovate UK	PI	2021	2023	Fearghal, Kearney	Regulatory technology and portfolio analytics using state-of-the-art econometrics and financial machine learning	£173,000	Research
Innovate UK	PI	2018	2021	Byron, Graham	Designing and deploying a retail analytics platform using advanced analytics and machine learning	£165,000	Research
DofE CAST Award NI	Co-I	2021	NA	Donal McKillop	PhD investigation into how AI innovation affect a highly valued financial service provision experience	£70,000	Research
Phoenix Natural Gas Ltd	PI	2014	2015	Alan Hanna Fotis Papailias	Forecasting daily demand for natural gas in Northern Ireland	£15,000	Consulting
DofE	Co-I	2016	2018	Donal McKillop Declan French	Landscape review of Northern Ireland Credit Unions	£32,000	Consulting
InvestNI	Co-I	2018	NA	Byron Graham	Review of state-of-the-art machine learning in the context of retail analytics and monitoring	£5,000	Consulting
InvestNI	Co-I	2019	2019	Byron Graham	Review of AI and web analytics for price comparison	£5,000	Consulting

(continued)

Source	Role	Start	End	People	Title	Full Economic Costs (£)	Type
InvestNI	Co-I	2021	2021	Fearghal Kearney	Review of Value at Risk analytics at the intersection of econometrics and machine learning	£5,000	Consulting
QBS CEBR	PI	2016	2019	Institute of Directors	Estimating the costs and benefits of corporation tax policy change in Northern Ireland	£3,500	Research

Total Research Income: approximately £1,176,500 in direct awards as PI or Co-I across 13 projects (source: `data/Grant_income.csv`).

Industry Leverage: Strong track record of industry co-funding and partnerships, including collaborative doctoral partnerships with local firms.

Research Impact and Knowledge Transfer

1. *Three PhD Scholarships — Centre for Finance and Responsible Technology* (Department of the Economy NI, £360K, 2025), including two collaborative doctoral partnerships with local firms: Pytillia and Napier AI.
2. *Understanding and Enhancing regulatory compliance in the Investment Management industry using AI* with Funds Axis Ltd and Momentum 1.0 (UKFin+ / UKRI, November 2024 – November 2025).
3. *Anomaly detection of large heterogeneous trading transaction and communication data* with Citigroup Belfast and Momentum 1.0 (2022–2023).
4. *AI and Advanced Retail Analytics* with Pearlai Ltd and Dr Byron Graham (KTP, 2017–2019).
5. *E.S.G. Fair Value Analytics* with Research Associates Dr Lisa Sheenan and Dr Byron Graham (KTP, 2021).
6. *Tail Risk Analytics, Stress Testing and Scenario Analytics* with Funds Axis Ltd, Dr Fearghal Kearney and Dr Colm Kelly (KTP, 2021–2023).
7. *Financial Conduct Authority Tech Sprint Mentor* (2023–present).
8. *AI and the Future of Financial Regulation* with Fearghal Kearney and Abhishek Pramanick, published in *The Economic Observatory* (2023).
9. *Hierarchical Flag Classification for Cultural-Symbol Monitoring* (QUB MSc AI project, 2024–2025): developed a 4,501-image Northern Ireland street-scene dataset and a hierarchy-aware taxonomy (70→16→7) with a ViT-H-14 baseline achieving 94.78% on the 7-category task; code and methods are documented in [economic-flag-classification](#).

Industry Collaborations

- **Pytillia** — Collaborative Doctoral Partnership (PhD scholarship, £120K, 2025).
- **Napier AI** — Collaborative Doctoral Partnership (PhD scholarship, £120K, 2025).
- **Funds Axis Ltd** — Computational approaches to financial regulation and compliance solutions (ongoing).
- **Citigroup Belfast** — Market manipulation detection (2022–2023).
- **Pearl AI Ltd** — Advanced retail analytics (2017–2019).
- **Financial Conduct Authority** — Tech Sprint Mentor (2023–present).

Research Supervision

Completed PhD Supervisions

1. Dr Jiadong Liu (graduated 2018): *Momentum in Empirical Asset Pricing* (**Principal Supervisor**).
2. Dr Ashleigh Neil (graduated 2019): *Law and Financial Stability* (**Principal Supervisor**).
3. Dr Colm Kelly (graduated 2021): *Machine Learning in Empirical Asset Pricing* (**Principal Supervisor**).
4. Veronica Zhang (2024): *Capital Policy and State Sponsorship in Chinese Banking* (**Principal Supervisor**).
5. Dr Kevin Johnson (graduated 2019): *A Case Study in Industrial Consolidation — The Irish Credit Union Sector* (**Co-Supervisor**).
6. Dr Qiao (Olivia) Peng (graduated 2021): *US Credit Union Mergers — Causes and Consequences* (**Co-Supervisor**).

Current PhD Supervisions

1. Fei Li: *Sustainable Investing, Reporting and Gender Diversity* (fully-funded QBS scholarship) (**Principal Supervisor**).
2. Abhishek Pramanick: *AI and the Future of Financial Regulation* (fully-funded QBS scholarship) (**Principal Supervisor**).
3. Dongwei (Jeffrey) Li: *The Economics of AI Patents and Productivity in Finance* (fully-funded DofE scholarship) (**Principal Supervisor**).
4. Yuqi Ding: *The Economics of Generative AI in Finance* (fully-funded QBS scholarship) (**Principal Supervisor**).
5. Yongsheng Dai: *Market Manipulation and Financial Anomaly Detection* (fully-funded PWC scholarship) (**Co-Supervisor**).
6. Brandon Cochrane: *Economic Cost of Cultural Displays in Northern Ireland* (fully-funded DofE CAST scholarship) (**Co-Supervisor**).

Visiting PhD Supervision

1. Weilong Liu (2022; Lingnan University College of Sun Yat-sen University, Guangzhou): *Market Manipulation and AI Anomaly Detection*.
2. James Hannon (2023; University College Dublin): *Leveraging Computer Vision to Understand and Enhance Insurance Pricing*.
3. Birem Abderraouf (2025; UPEC Paris): *Generative AI in Capital Markets*.

International Research Network

- **Visiting PhD Supervisors:** Students from China (SYSU), Ireland (UCD), France (UPEC Paris).
- **International Collaborations:** Active research partnerships across Europe, Asia, and North America.
- **Conference Presentations:** Regular invited speaker at major international conferences — see below.

Conference Presentations

- Invited Speaker, *Dynamic Signal Weighting of Performance Signals for Managerial Turnover Decisions: Evidence from Professional Football*, INFINIT Conference, Edinburgh Napier University, Jun 2025.
- Invited Talk, *Rethinking Research Impact: Combining Effect Sizes and Economic Significance in Finance*, Royal Statistical Society Annual Conference, Brighton UK, Sep 2024.
- Keynote Speaker, *Estimating Systemic Risk*, Irish Finance Association, Maynooth University, Ireland, April 2023.
- Invited Talk, *Teaching Data Science in the Age of FinTech*, Royal Statistical Society Annual Conference, Aberdeen UK, Sep 2022.

- Invited Talk, *Carbon Pricing and Machine Learning*, Multidisciplinary Workshop on Fintech, Islamic Finance and Sustainability (online), Hamad Bin Khalifa University, Qatar, Nov 2022.
- Invited Speaker, *Understanding Fintech and Financial Stability*, International Workshop on Financial System Architecture and Stability, Bayes Business School, London, Sep 2018.
- Invited Speaker, *Systemic Risk and Basel Compliance*, British Accounting and Finance Association Annual Conference, London, Apr 2018.
- Invited Speaker, *Differential Regulation of Irish Credit Unions: Does One Size Fit All?*, 2nd Conference on Contemporary Issues in Banking, Centre for Responsible Banking and Finance, St Andrews, Dec 2017.
- Invited Speaker, *Business Model Diversity, Efficiency and Productivity of Cooperatives*, European Workshop in Efficiency and Productivity Analysis, Aalto University, Finland, Jun 2017.
- Invited Panellist, *Statistical Inference and Credibility in Finance*, Emerging Scholars in Banking and Finance, Bayes Business School, London, Dec 2016.
- Invited Speaker, *Capital Regulation Compliance and the Performance of European Banks*, International Workshop on Financial System Architecture and Stability, HEC Montreal, Aug 2016.
- Participant, *Bloomberg Annual Educational Symposium*, Bloomberg London HQ, Sep 2015.

Research Infrastructure and Capabilities

Technical Expertise

- **Advanced statistical methods:** time series econometrics, machine learning, deep learning.
- **Programming languages:** R (expert), Python (advanced), SQL, MATLAB.
- **Specialised software:** Bloomberg Terminal, Reuters, specialised financial databases.
- **High-performance computing:** cluster computing and big-data analytics.

Research Facilities

- **Queen’s Business School Remote Analytics Lab Platform** (Lead Developer, 2021–2024).
- **Finance and AI Research Lab** (Co-director, 2022–2024).
- **Ulster University Centre for Finance and Responsible Technology** (Director, 2024–present).

Training and Capacity Building

- Design and delivery of graduate teaching in Financial Data Science and causal AI, with applications in trading, market microstructure, and policy analysis.
- Supervision and mentoring across econometrics, machine learning, and computational finance, including industry-partnered projects.
- Emphasis on reproducible research (versioned data pipelines, model governance) and rigorous statistical standards for evidence-based decision-making.

Future Research Directions

Emerging Research Themes

1. **Generative AI in capital markets:** applications and regulatory implications.
2. **Explainable AI for financial regulation:** transparent algorithmic decision-making.
3. **Systemic risk in digital finance:** cryptocurrency and DeFi risk assessment.
4. **Sustainable finance analytics:** ESG integration and climate risk modelling.

Methodology Innovation

- Integration of large language models with traditional econometric approaches.
- Development of hybrid AI systems for financial decision-making.

- Advanced causal inference methods for policy evaluation.

Professional Recognition and Service

Academic Leadership

- **Director**, Centre for Finance and Responsible Technology, Ulster University Business School, 2024–.
- **Co-founder**, Finance and AI Research Lab (with Dr Fearghal Kearney), Queen’s University Belfast, 2022–2024.
- **Lead Developer**, Queen’s Business School Remote Analytics Lab Platform (Q-RaP), 2021–2024.
- **QUB Academic Lead**, Steering Group for Northern Ireland Global Centre in Secure Connected Intelligence for Regulatory Technology in Finance, 2022–2024.
- **Programme Director**, MSc Quantitative Finance, Queen’s University Belfast, 2018–2022.
- **Senior Research Fellow** (Sabbatical), International Research Centre on Cooperative Finance, HEC Montreal University, Canada, May–September 2018.
- **Programme Director**, MSc Computational Finance & Trading, Queen’s University Belfast, 2014–2018.
- **Co-founder**, Queen’s Student Managed Fund, 2012–2024.
- **Implementation Team Member**, Bloomberg Trading Room, Queen’s University Belfast.
- **External Grant Reviewer**, UKFin+ (UKRI specialist funded project) — reviewed feasibility grant application (£100K) for financial services innovation research, 2024.
- **Organiser**, Symposium on AI and the Future of Financial Regulation, Queen’s University Belfast, November 2023.
- **Organiser**, Symposium on Safety and Assurance in Finance, Queen’s Business School, November 2024.
- **Chair**, Panel Debate on “Digital Regulation: Shaping Digital Markets and Safeguarding Consumer Rights in Northern Ireland”, Northern Ireland Competition Forum, May 2024.

Professional Recognition

- Chartered Statistician, Royal Statistical Society (2019).
- Advanced Data Science Professional, Royal Statistical Society (2023).

Awards

- Teaching Fellow of the Higher Education Authority (2012).
- QUB Teaching Award (2016).
- 1st place, CFA European Quantitative Finance Awards (2018).
- EEECS Scholarship for AI MSc (2023).
- Associate Research Fellow, QUB Momentum One Zero (formerly Global Innovation Institute), 2021–2024.

Research Philosophy: Bridging cutting-edge quantitative methods with practical financial applications, maintaining statistical rigour while ensuring real-world relevance and regulatory compliance.