
Editorial

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This special issue of the *Journal of Risk Management in Financial Institutions* focuses on an interesting and important element of risk management: data and models. Some would say that data and models are at the foundation of modern risk management approaches. This could be illustrated by, for example, the quantitative modelling approaches being the first of the three pillars of Basel II/III and Solvency II and continuous industry efforts to improve data collection for non-financial risks, most recently as pertains to security, data privacy and other digital risks.

The reality is that the use of data and models is not new, having been used in the past, although their use in modern times is accelerating at an exponential rate. As early as 400 BC, trade financiers in Athens differentiated rates by season and route for contracts which were cancelled if the ship could not successfully deliver its cargo. In 1662, it was recognised that longevity and mortality patterns in a group of individuals was more predictable than that for any individual in the group, allowing Edmund Halley in 1693 to develop the first mortality table, allowing an actuarial basis for life insurance pricing.¹

A discontinuous leap forward came about in the 1980–2000s with the scientific advances in option and derivative pricing, leading to more advanced financial instruments and markets (derivatives) as well as advances in credit and financial risk measurement (the ‘Merton’ probability of default model, Value at Risk [VAR] calculations, etc). Keeping pace of market developments, the Bank of International Settlements (BIS) and the European Insurance and Occupational Pensions Authority (EIOPA) recognised internal models for credit, financial, insurance and operational risks as the foundation for Basel II and Solvency II. Another discontinuous leap has been made since the 2010s,

driven by new scientific approaches (artificial intelligence [AI], machine learning) and greater data availability (eg both structured and non-structured data such as video and audio from the web). Combined with considerably more powerful and cheaper technology (the Cloud, AI chips, Internet data sources), this has brought the science (and art) of data usage in risk management into the mainstream of financial services. It has also been the trigger for an explosion in data and AI-focused financial technology start-ups in the last 10–15 years.

As the anecdotal history illustrates, the rapid development of data and models in risk management is driven by four factors: risk-adverse actors seeking better economic outcomes; regulators seeking a safer and more secure financial services industry; scientific advances in pricing and measuring risk; and, finally, greater availability of data and computing power.

Furthermore, the anecdotal history also illustrates that the business cases historically began by supporting better credit and insurance underwriting decisions and expanded into a more comprehensive customer lifetime value management perspective considering propensity to purchase, cross or up-sale, pre-pay or lapse, fraud, etc. Other valuable use cases can be found in the areas of investment risk/return optimisation and security selection, operational risk measurement, solvency adequacy and risk-based capital steering. Leading industry players are increasingly taking one step further and using data-driven risk management insights to drive improved process efficiency and client-facing service (onboarding/know your customer [KYC], credit process, payments processing). With the advent of generative AI, this trend is accelerating, further increasing the competitive value of data and improved risk management in financial services.

Despite the tremendous value and further potential, there are some risks associated with the increased use of data and models. These include the obvious risks associated with model accuracy as well as the operational stability and security of advanced systems needed to run the models, particularly when using open-source architecture, but they also include more subtle risks of ensuring that models are used optimally in the context of the business and processes while avoiding bias. These in turn are becoming central elements in regulations (eg Digital Operational Resilience Act, Basel Committee on Banking Supervision 239) which may further impact the speed and potential for adoption of leading techniques.

The papers accepted for this special issue provide a reasonably comprehensive coverage of the existing use cases and potential risks. The first paper, 'On Data and Models: Is More Always Better' by Wilson, sets the stage by providing a high-level summary of the business cases and the risks of leveraging more data and more advanced models. The author concludes with the opinion that common sense in terms of awareness of the potential pitfalls as well as a pragmatic approach to modelling is needed, in addition to the more common model risk management framework.

The next three papers focus more on positive business cases for the increased use of data and models. The second paper, 'Leveraging Financial Personality for Inclusive Credit Scoring Amidst Global Uncertainty' by van Thiel explores how including alternative psychometric data, combined with traditional credit scoring data, can improve the accuracy of credit underwriting models, with a specific application to vulnerable segments who might otherwise be excluded from credit markets due to a lack of data used by traditional scoring models or lower data, which indicates a lower quality without further segmentation. The research is not only interesting in its own right, but also as an illustrative example of how non-traditional data (eg psychometric, non-structured social media, etc data) is being used in credit and insurance underwriting.

The third 'paper', 'Lost in Noise?' by Quell, develops the business case, as well as pitfalls, from using more advanced models for financial risk measurement. It begins by highlighting the

limitations of applying advanced machine learning models to financial market time series data, which is typically noisy, non-stationary and short, for the purpose of financial risk VAR measurement. It then proceeds to demonstrate how a pragmatic, 'simpler' and more dated Kalman filter algorithm can overcome the data issues and improve explicability. The research is interesting for the results, but it also builds a strong case for considering whether models are 'fit for purpose' and that sometimes the 'leading edge' can be the 'bleeding edge'.

The fourth paper, 'On the Wicked Problem of Quantifying and Managing Non-financial Risks and the Role of Digital Technology in Providing Solutions' by Butler, focuses on the business case for using data and models in the area of operational or non-financial risk management. The paper begins by outlining the complexity and challenges of measuring and managing non-financial risk. It then continues by illustrating how improved models and data are being used to provide greater transparency and early warning in the control cycle for non-financial risks as well as providing better, more accurate and more cost-effective risk evaluation, eg for anti-money laundering/KYC evaluation. This is also one of the top areas of focus for risk and customer lifecycle management in large financial services institutions at present and combines the core of industry initiatives centred on creating more effective, automated controls.

The final two papers within the data and model rubric of the special issue turn from business cases to potential pitfalls. The fifth paper, 'The Potential Impacts of the Digital Revolution on the Operational Risk Profiles of Banks' by Grimwade, provides a high-level overview of how the financial services industry's trend towards greater digitalisation, including the use of data and models for risk management, can impact operational risk, highlighting business continuity, disaster recovery, IT security and vendor management, to name a few of the areas discussed. The conclusion is that existing operational risk control frameworks need to be updated and continually refined in the face of a dynamically changing environment. This work provides a valuable and different angle on how different non-financial risks can be thought of through common drivers rather than through

top-down risk-specific frameworks, where valuable interlinkages could be missed.

The sixth and final paper within the scope of data and models, ‘Trusted and Open Corporate Data’ by Wolf, discusses one of the most important risks of an increasingly digital economy: trust in the identities and data presented by potential digital counterparts. After building the business case, the author concludes with a timely and strong endorsement for industry-wide action to create a universal and verifiable International Organization of Standardization entity identification standard to ensure that the full potential of the digital economy can be realised.

This special issue attempts to make a preliminary contribution to the fundamental areas of current risk management advances in the financial services industry. The field is moving fast, and we expect a proliferation of future advances among both practitioner and academics as generative AI applications become mainstream and regulations set tighter constraints on how businesses can manage risks and optimise their business.

Separately, this issue of the journal includes two additional papers. Saidane’s study uses generalised latent Poisson factor models to assess default correlations in credit portfolios. In this approach,

defaults are driven by a small number of common latent factors and — conditional on these factors — the defaults become independent. Each default sequence is then fitted to a generalised linear model with Poisson response and log-link function. The model provides a flexible framework for the computation of VAR and expected shortfall of a credit portfolio, and is illustrated using a practical example. The paper by Alsuyayfi *et al.* looks at the insurance sector in Saudi Arabia and examines the mediating effect of firm risk on the relationship between board structure and firm performance. In contrast to the existing literature, the study reveals that boards composed of independent members may monitor firms less effectively, leading to higher risk-taking. This edition of the *Journal of Risk Management in Financial Institutions* is rounded off with reviews of two books on critical challenges in business management resulting from climate change and non-financial risk management.

Reference

- 1 Wilson, T. (2015) ‘Value and Capital Management: A Handbook for the Risk and Finance Functions of Financial Institutions’, John Wiley & Sons.

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