



### Article of the month:

#### **Believing the Bot - Model Risk in the Era of Deep Learning**

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**Ronald Richman, Nicolai von Rummell, Mario V. Wuthrich. (SSRN)**

Deep Learning models are currently being introduced into business processes to support decision-making in insurance companies. At the same time model risk is recognized as an increasingly relevant field within the management of operational risk that tries to mitigate the risk of poor business decisions because of flawed models or inappropriate model use. In this paper we try to determine how Deep Learning models are different from established actuarial models currently in use in insurance companies and how these differences might necessitate changes in the model risk management framework. We analyse operational risk in the development and implementation of Deep Learning models using examples from pricing and mortality forecasting to illustrate specific model risks and controls to mitigate those risks. We discuss changes in model governance and the role that model risk managers could play in providing assurance on the appropriate use of Deep Learning models. [Read More](#)

### Actuarial Models

#### **Forecasting age distribution of death counts: an application to annuity pricing**

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**Han Lin Shang and Steven Haberman. (Annals of Actuarial Science, IFA)**

We consider a compositional data analysis approach to forecasting the age distribution of death counts. Using the age-specific period life-table death counts in Australia obtained from the Human Mortality Database, the compositional data analysis approach produces more accurate 1- to 20-step-ahead point and interval forecasts than Lee–Carter method, Hyndman–Ullah method and two naïve random walk methods. The improved forecast accuracy of period life-table death counts is of great interest to demographers for estimating survival probabilities and life expectancy, and to actuaries for determining temporary annuity prices for various ages and maturities. Although we focus on temporary annuity prices, we consider long-term contracts that make the annuity almost lifetime, in particular when the age at entry is sufficiently high. [Read More](#)

### Financial Risk

#### **The Shift From Active to Passive Investing: Potential Risks to Financial Stability?**

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**Kenechukwu Anadu, Mathias S. Kruttli, Patrick E. McCabe et al. (SSRN)**

The past couple of decades have seen a significant shift from active to passive investment strategies. We examine how this shift affects financial stability through its impacts on: (i) funds' liquidity and redemption risks, (ii) asset-market volatility, (iii) asset-management industry concentration, and (iv) comovement of asset returns and liquidity. Overall, the shift appears to be increasing some risks and reducing others. Some passive strategies amplify market volatility, and the shift has increased industry concentration, but it has diminished some liquidity and

redemption risks. Finally, evidence is mixed on the links between indexing and comovement of asset returns and liquidity. [Read More](#)

## **Economics with Market Liquidity Risk**

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***Viral V. Acharya, Lasse Heje Pedersen. (SSRN)***

For markets to work efficiently, buyers and sellers must be able to transact easily. People must have access to a marketplace such as a supermarket or a stock exchange with adequate liquidity. Further, people must have confidence that such a well-functioning marketplace will also exist in the future. Market liquidity risk is the risk that the market will function poorly in the future, handcuffing the “invisible hand” through which markets produce allocative efficiency. We discuss the effects of market liquidity risk on asset pricing, investment management, corporate finance, banking, financial crises, macroeconomics, monetary policy, fiscal policy, and other economic areas. [Read More](#)

## **Why is There a Secular Decline in Idiosyncratic Risk in the 2000s?**

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***Söhnke M. Bartram, Gregory W. Brown, René M. Stulz. (SSRN)***

Except for relatively short but intense episodes of high market risk, average idiosyncratic risk (IR) falls steadily after 2000 until almost the end of our sample period in 2017. The decrease has been such that from 2012 to 2017 average IR was lower than any time since 1965. The secular decline can be explained by the fact that U.S. publicly listed firms have become larger, older, and their stock more liquid. The same changes that bring about historically low IR lead to increasingly high market-model R-squareds. [Read More](#)

## **Investments**

### **Do Institutional Investors Manage Factor Exposures Strategically?**

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***Dirk Broeders, Kristy A.E. Jansen. (SSRN)***

Do institutional investors manage factor exposures at the asset class level strategically? This is a key asset and risk management question because factor exposures significantly contribute to return and risk. We answer the question by an empirical assessment of (un)conditional factor exposures of large institutional investors using proprietary data on occupational pension plans. The answer depends on the asset class. Based on two key findings we claim that pension funds manage equity factor exposures strategically. First, value, momentum, carry, and low beta factors contribute significantly to cross-sectional heterogeneity in unconditional equity returns. Second, time variation in conditional factor exposures for equities is limited. By contrast, support for strategic decision-making in fixed income factor exposures cannot be found. Market exposures drive the heterogeneity in unconditional fixed income returns, and the time variation in conditional factor exposures is much larger than strategic decision-making suggests. The average fixed income factor exposures can get as low as -0.6 and as high as 0.8. We also find that exogenous events and pension fund characteristics influence factor exposures through regulations. A high funding ratio and a high fraction of retirees to total participants lowers market exposures and increases exposures to credit risk, carry, and low beta. Furthermore, size does not influence factor exposures while delegated asset managers do. [Read More](#)

## **Risk-Managed Momentum Strategies**

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**Lars Rickenberg. (SSRN)**

We show that conditional skewness and kurtosis of the momentum strategy are highly time-varying, take extreme values and sometimes may not exist. The high negative skewness and high kurtosis arise since winners' and losers' skewness moves in opposite direction whereas kurtosis comoves. Moreover, momentum returns do not follow a random walk. Exploiting these observations we present strategies that manage momentum's volatility by advanced volatility models in calm periods and downside risk in periods when a momentum crash is likely. Compared to the Realized Volatility managed momentum strategy frequently examined in the literature, our switching strategy exhibits higher returns, significantly reduces left tail risk and provides statistically significant utility gains for mean-variance investors, CRRA investors as well as loss averse investors. [Read More](#)

### **Banking**

#### **Complex op risk models open to high error, study finds**

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**Alexander Campbell. (Risk.net)**

Operational risk models used by many large banks could produce flawed results when calculating extreme tail risk events, upcoming research shows. The findings suggest that firms may be holding too much, or too little, capital against these risks. The Basel II capital rules gave banks the option – at their regulators' discretion – of using internal models to calculate their own Pillar 1 capital requirements for operational risk, under the advanced measurement approach (AMA), one of three options. [Read More](#)

#### **Banking and Regulatory Responses to FinTech Revisited: Building the Sustainable Financial Service 'Ecosystems' of Tomorrow**

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**Mark Fenwick, Erik P. M. Vermeulen. (SSRN)**

Over the last decade, FinTech – broadly defined as the use of new technologies to compete in the marketplace of financial institutions and intermediaries – has disrupted the financial services sector. In this paper, we revisit the question of how banks and regulators should respond. We argue that incumbent financial service providers can learn useful lessons from the experience of the most innovative companies and their efforts to navigate the new realities of doing business in a networked age. One of the striking features of successful large businesses with an established track record for sustained innovation has been their capacity to implement effective corporate venturing strategies that continually feed dynamic, technology-driven innovation (“borrowing the startup genie’s magic”). Here, we identify seven corporate venturing strategies adopted by the most innovative companies and argue that incumbent banks could utilize similar strategies in responding to FinTech. A crucial element of these strategies is a recognition of the value of “co-creation,” namely an inclusive, collaborative partnering between incumbents and non-traditional players. To implement this objective, incumbents need to become open “ecosystems” that absorb the skills and resources of the most dynamic startups. We argue that some banks are already moving in this direction and that this trend towards “unbundling” will likely continue. The paper ends with a discussion of the implications of such an account for regulators and regulatory design. In order to establish an effective ecosystem, regulators need to become active

participants in these new ecosystems. We characterize this approach as “community-driven” regulatory design and identify some key features of such an approach. [Read More](#)

## Trending topics

### Undeniable Synergy: A Case for the Chief Modeling Officer

*Van Beach. (The Actuary Magazine)*

Actuarial practice and technology have undeniable synergy. With the introduction of mainframe computers, actuaries gained a tool to improve the speed and accuracy of their work along with greater access to data. Personal computers unshackled actuaries, enabling them to build models that provide greater insights into actuarial risks and the financial operations of insurance companies around the globe. [Read More](#)

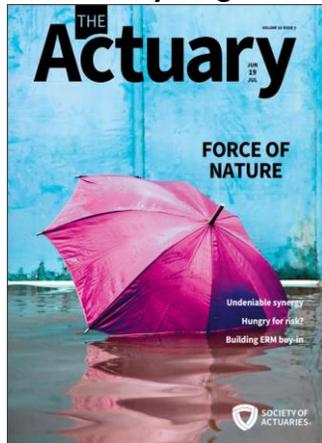
### Conceptualizing Blockchains: Characteristics & Applications

*Karim Sultan, Umar Ruhi, and Rubina Lakhani. (SOA)*

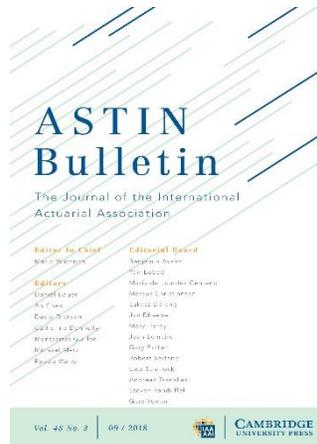
This paper presents an overview of blockchain technology, identifies the blockchain’s key functional characteristics, builds a formal definition, and offers a discussion and classification of current and emerging blockchain applications. [Read More](#)

## Resources (click upon image to access)

### The Actuary Magazine:



### ASTIN Bulletin:



### Irish SoA Database:

