Newsletter #12 – April 2023
–Finance & FinTech –

Artificial intelligence (AI) presents numerous opportunities for the banking and finance industry, ranging from improved customer experiences to enhanced risk management and fraud detection.

With the ability to analyze vast amounts of data, **AI-powered tools can provide personalized financial advice, automate routine tasks, and reduce operational costs**.

Additionally, AI algorithms **can identify patterns** and **anomalies** in **financial transactions**, enabling banks and financial institutions to detect potential fraudulent activities more efficiently.
Of particular interest today, AI can assist in **credit risk modeling that aims to assess the potential losses that may arise from lending activities**.

The use of credit risk models in banking has evolved significantly from the traditional approach of relying solely on historical data to more advanced techniques that incorporate predictive analytics and machine learning. These models provide an efficient way of measuring the probability of default and expected loss, allowing banks to make informed decisions on lending and credit risk management.

None the less; as the recent collapse of SVB; Signature Bank and Credit Suisse have demonstrated, financial institutions face several challenges in accessing credit risk. One of the most significant factors is the **constant evolution** of the financial market and the **emergence** of new risk factors. As such, credit risk models must be updated regularly to capture the changing dynamics of the market.

Additionally, the reliance on complex algorithms and statistical models may result in a lack of transparency and interpretability, making it difficult for banks to explain their decision-making processes to regulators and customers.

We would like to introduce you to the [AI Muse™ Grenoble](#) discussion [group](#). In this [group](#) you will be able to post, comment and discuss articles.

We would like to remind you that our website is available at the following address: [Muse™: Listen to your muse](#).

Don't hesitate to leave us a comment, to share our newsletter with others.

Enjoy reading!

- [**Inside the collapse of Silicon Valley Bank**](#)—**New York Times**

In her New York Times article, Maureen Farrell **suggests that while the bank's CEO extolled innovation and the future of tech**, the bank paid less attention to risk management and was caught flat-footed by economic change.

The contribution outlines the history of the Silicon Valley Bank, its rapid expansion under Gregory Becker, its questionable investments in long-term government bonds, and its rapid fall early this month.

The author concludes that this example underlines both the **persistence**, and the **dangers** of **haphazard risk management** in the banking industry.

- [**Silicon Valley Bank: A failure in risk management**](#)—**GARP**

Clifford Rossi, in GARP's Cro Outlook, argues that **insufficient board oversight**, **incomplete modeling** and **poor liquidity risk management** practices were **key factors** that led to the bank's demise.

Technically, he underlines that the bank failed due to a liquidity crisis—i.e., a lack of sufficient cash inflows to sustain it during a period of significant cash outflows (notably the customer withdrawals of **$42 billion in a single day**). The company made several risk management blunders. The first was in placing large bets on Treasury bonds back when interest rates were low.

- [**A Beginner's Guide to Credit Risk Modeling**](#)—**Digital Vidya**

In y [Anukrati Mehta](#)'s contribution to Digital Vidya, the author **explores both the definitions of credit risk and credit risk modeling**, the **different types of credit risk**, the factors that affect credit risk modeling, and the types of credit risk models. She notes that the factors affecting credit risk modeling include the probability of default, the loss given default, and the exposure of default.

Finally, she reviews the three major types of credit risk rating models: **those based on financial statements, those that measure default probability, and those that leverage big data analytics**.

- [**Artificial intelligence is the future of the banking industry—Are you prepared for it?**](#) **—International Banker**

In this contribution to International Banker, [Pritham Shetty](#) explores how the use of artificial intelligence (AI) is transforming the banking industry.

He discusses various applications of AI, including **fraud detection, customer service, and risk management**.

It also highlights the benefits of AI, such as increased efficiency, improved accuracy, and better customer experience.

However, the article also notes that implementing AI can be challenging for banks due to the need for large amounts of data and specialized skills.

The article concludes that while AI presents significant opportunities for the banking industry, **banks must ensure they are prepared to leverage it effectively by setting short-term goals**, **gauging their AI readiness, and identifying the appropriate tools to move forward**.

- [**Quantum computing reduces systemic risk in financial networks**](#)—Nature

This paper describes the development of an algorithm capable of **reducing systemic risk by optimizing interconnections between banking institutions, firms and countries.**

To achieve this, researchers [Amine Mohamed Aboussalah](#), [Chang Chi](#) and [Chi-Gun Lee](#) developed a **two-step algorithm that uses quantum partitioning to make interconnections more resilient**.

In the first step, based on a virtual model of an interbank network previously implemented from the research of Brioschi et al. (Risk capital financing and the separation of ownership and control of business groups, 1989) and Elliott et al. (Financial networks and contagion, 2014), the researchers optimized these interconnections.

In a second step, after injecting failures into the virtual interbank network, the researchers used the quantum computing algorithm, thanks to a special type of adiabatic quantum computing (AQC), to optimize each link independently to delay the propagation of risks.

Ironically, this paper was originally published one day before the failure of Silicon Valley Bank (SVB) and 10 days after Credit Suisse was bailed out by its Swiss rival UBS.

- [**Financial digitalization, fintech, and the collaborative economy**](#)—Springer Link

This article is co-authored by [Henri B. Meier](#), [John E. Marthinsen](#), [Pascal A. Gantenbein](#) and [Samuel S. Weber](#).

Faced with competition from FinTech, InsurTech and RegTech companies, Swiss banking and insurance institutions, some of which are centuries old (e.g., Credit Suisse or UBS), are in the midst of a major transformation in the face of new technologies such as smart contracts, artificial intelligence (AI), big data or blockchain technologies (cryptocurrencies, Distributed Ledger Technology [**DLT**] or Decentralized Finance [**DeFi**]).

In the banking sector, some companies are focusing on specific business models for both B2B and B2C. These business models relate to process management, while others relate to the provision of technology, infrastructure, data management and analytics.

The insurance sector has also evolved. The insurance sector has been able to implement new technologies such as AI, big data or blockchain technologies. According to a report published on 2 December by the [Institute for Financial Services Zug](#) (IFZ), out of 598 registered insurance companies on the European continent, Switzerland ranks fourth with 58 insurance companies.

Although the IFZ notes an increase (+8) in Switzerland compared with the previous year. However, Switzerland still lags behind France (72 companies) and Germany (103 companies) and far behind the number one, the United Kingdom, which alone has 168 insurance companies (28%).

The combination of these different business models and the introduction of new technologies has enabled the Swiss banking and insurance sectors to modernize their operations.

This is partly due to the adoption by the Swiss parliament of a federal regulation, the "Federal Act on the Adaptation of Federal Law to Developments in Distributed Ledger Technology," which will come into force on 1 August 2021. This regulation modernized, consolidated and simplified previous regulations and formalized the use of DLT and DeFi in validation processes. It also allowed for the regularization of cryptobanks (Saba Bank and Sygnum) and cryptocurrencies with the aim of combating money laundering.
This article appeared in the book Swiss Finance (full access here, in the open edition).

- **The evolution of fintech: A new post-crisis paradigm? —Social Science Research Network (SSRN)**

This publication dates from October 2015, seven years after the subprime crisis and the bankruptcy of Lehman Brothers. And 8 years after the failure of Silicon Valley Bank (SVB) in March 2023.

Although this publication is from 2015, it is interesting to see whether the measures put in place after the subprime crisis have reduced the systemic risks in the financial system. Or whether the regulations put in place have had no effect.

At that time (2015), researchers Douglas W. Arner, Janos Nathan Barberis **at** Ross P. Buckley, wrote a publication on the history of fintech or financial technology from 1866 to 2015. The publication traces the introduction of information and communication technologies such as the telegraph (1866) to the use of algorithms in banking, or the application of technology to one of the oldest human activities.

The authors also look at the subprime crisis of 2008 and the use of new regulatory tools to avoid a new cascade effect of the banking system collapse in the future. In addition to focusing on events in the West, this publication also examines emerging markets on different continents, such as the African and Asian markets.

Bonus
- **The Swiss banking system—Springer Link**

This article is co-authored by Henri B. Meier, John E. Marthinsen, Pascal A. Gantenbein and Samuel S. Weber. This article traces the history of the Swiss banking system from the 16th century to the present day.

In addition to historical milestones such as the Industrial Revolution (19th century), which saw the birth of the current structure of the Swiss banking system. The authors explain how the Swiss banking system works with the help of detailed tables and graphs. They also explain the regulatory systems that allow the Swiss banking system to regulate itself.

The authors also discuss in more detail the new challenges facing the structure of the Swiss banking system. One of the new challenges facing the Swiss financial system is the digitalization of the international banking system. By digitalization, we mean the emergence of cryptocurrencies such as bitcoin and ethereum. It also includes the development of state-owned digital currencies such as the e-yuan (Chinese digital currency).

As an example, in 2022, **Switzerland** will be home to **around 400 companies** in the **fintech sector**. A **third of these companies** are dedicated to infrastructure and protocols that allow simultaneous read and write access to a database (**distributed ledger technology—DLT**). This infrastructure ensures the reliability of the data and limits the visualization of the same data. This is the same technique that has allowed the emergence of blockchain technology.

But digitalization isn't just about cryptocurrencies, it's also about cyberdefense. Since the invasion of Ukraine, we have seen an increase in cyber attacks in various forms (botnets, phishing, Dis…). These different vectors of computer attacks can bring down the banking system. We know that Switzerland has two systemic banks (Credit Suisse and UBS).

This article appeared in the book Swiss Finance (full access [here](#), in the open edition).

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