



European Risk Management Council

Risk Landscape Review

June 2018



- **Will “Bankosaurus” survive the digital revolution?**
- **Cyber Risk Landscape Report**
- **Credit Risk 2.0**



DEAR READER,

I am delighted to present the Q2 2018 edition of the Risk Landscape Review. We included three articles to this edition which address important issues related to Fintech and business strategy, cyber risk and credit risk.

Proliferation of Fintech and a use of digital innovations have opened an opportunity for a new generation of companies to enter the financial services market and aggressively attack traditional market players. In his article, Renier Lemmens analyses how dangerous this attack can be for incumbents and why incumbents with all their vast resources and market power find it difficult to provide a robust response to this challenge.

We include a monthly update of cyber security scores for a sample of organisations, Council's members. The assessment suggests that in June 2018 cyber vulnerabilities visible for hackers were up and an overall level of cyber protection has declined compared to that in May.

Finally, we include an edited excerpt from a report published by Chartis Research on technology solutions for credit risk. Chartis argues that the industry is moving to Credit Risk 2.0 approach. In order to cope with the new normal, financial institutions need a new methodological and technical structure for their credit risk processes.

My huge thanks to all contributors.

Enjoy the reading.

Yours sincerely,

Dr Evgueni Ivantsov

Chairman of European Risk Management Council



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Bankosaurus - Headed for extinction or survive through evolution?

By Renier Lemmens, Chairman of TransferGo and former CEO of PayPal EMEA

At the recent European Risk Council Meeting, I introduced myself like a dinosaur addressing a conference of dinosaurs with the following introduction: 'Let's face it gentlemen, the climate is changing, the mammals are taking over, and we have a brain the size of a walnut. We are doomed.' But are today's banks truly dinosaurs destined for extinction as Fintech mammals are taking over the world?

Fintech has been around for 50 years. We used to call it punch cards - then cobol - then mainframes - then minis - then client server computing etc., etc. So what is really different now?

- A couple of engineers and a half-baked product idea are enough to get going with a new business idea. Leveraging rich toolsets and on-demand support services, just about anyone can start prototyping compelling new user experiences, innovative products, or value-adding back-office services.
- Customers can be picked off easily and relatively cheaply via the internet. Even CPAs that are high only in the context of very narrow product offerings are still much lower than what incumbents had to invest in expensive high street or direct mail

infrastructure. New players have complete control over who they target and be ruthless in excluding unattractive segments.

- Funding is ample and readily available. Angels and VCs provide risk capital that hitherto was just not accessible.

So many new Fintechs are having a bite from the apple. They move in with speed, focus, and determination and it can feel like the Bankosaurs (or Insurosaurus or Assetosaurs) are overtaken left, right, and center.

But before looking at why the incumbents may find it all so difficult, let's look at what is actually happening.

- On a first principles basis, nothing is changing in mainstream financial services. Everyone makes money either by borrowing cheaply and lending dearly, taking a fee to invest, taking a fee to move money, or mutualising risk.
- The majority of Fintechs are developing product features, new products, or back-office services that appear to me to be waiting for copying by incumbents or acquisition by incumbents. Few will have the



momentum and scale to become lasting independent entities.

- The majority of Fintechs are making no or very little money on the spearhead products. Shielded by investor focus on growth and momentum, they either predict magical cross-sell opportunities or price increases once they establish scale.
- Many Fintechs are critically dependent on the infrastructure and services provided by the Bankosaurus.
- Very few - if any - financial services sub-sectors have been disrupted in a way that puts incumbents out of the game.

It is very early days - and way too many industry observers are declaring revolution and the end of incumbents. It reminds me of where e-commerce was in the late nineties when traditional retailers were declared a dying breed. Of course, while it is true that Amazon and ASOS and many others have shown enormous impact, it is equally true that many incumbent retailers are doing just fine with compelling multi-channel offerings - after an admittedly slow start. Are we going to see a similar pattern of late catching-up in financial services?

So, why is it all so hard for financial service incumbents?

First, they all suffer from the innovator's dilemma. Fintech's are picking off the most rewarding customers in areas where incumbents overcharge for sub-par products and services. The quarterly earnings and budget pressures make it very difficult for incumbents to adjust pricing and service levels proactively. Continuing to overcharge and under-serve sticky customers is in the short term much more rewarding than aggressive countering of Fintech propositions, even in the face of substantial customer attrition.

Second, incumbents commonly lack clarity of vision and innovation at the top. A Fintech founder/CEO is focused, passionate, and very clear about the value proposition and business system design of the new venture. The average Bankosaurus C-level executive is drowning in complexity and innovates mainly by looking in the rear view mirror. In fact, innovation and vision are often subcontracted to staff departments and, by the time they get to the CEO, have been ground down into a pursuit of lowest common denominator changes resulting from protecting vested interests of various business and functional areas.

Third, incumbents suffer from the 'one size fits all' approach, which, together with the need to squeeze all innovation into the existing infrastructure, leads to cumbersome and unconvincing innovations and progress. Just contrast the speed and focus with which a Fintech can implement customer service improvements in a cloud-based solution with the complexity of implementing the same change in a 3,000-person call centre. Similarly, incumbents usually develop solutions that need to work for all customers, even though they are relevant to a subset only.

Fourth, incumbents are held back by the tyranny of legacy systems and roadmap congestion. Just keeping their mind bogglingly complex infrastructure up to date takes up the majority of engineering capacity. And any new stuff needs to fit in - and work with everything else in place. A tall order!

* * *

So - are the Bankosaurus doomed? Not necessarily, provided they address the four issues spelled out above with courage and creativity. In the next edition of this newsletter, I will share some perspectives on how they can keep pace with the innovative ecosystem around them.



Cyber Risk Landscape Report: Cyber Vulnerabilities Visible for Hackers Are Up

European Risk Management Council works with Cyber Rescue Alliance to provide crucial information for Boards and CROs on cyber vulnerabilities visible for hackers.

Using a sample of 85 organisations which participate in Risk Council's activity, we rank cyber exposure across the Risk Council's members, leveraging the impressive SSC platform. The technology is non-intrusive which allows to monitor and detect system vulnerabilities without getting an access to the system. Running a comprehensive scan of cyber ecosystems of each company included to the sample, we create an unbiased picture of cyber protection across the companies.

This month, we have re-assessed the cyber risk of the portfolio and compared it with that in May. The graph below shows how the cyber security posture of each Council member in the sample has changed over the last 30 days.

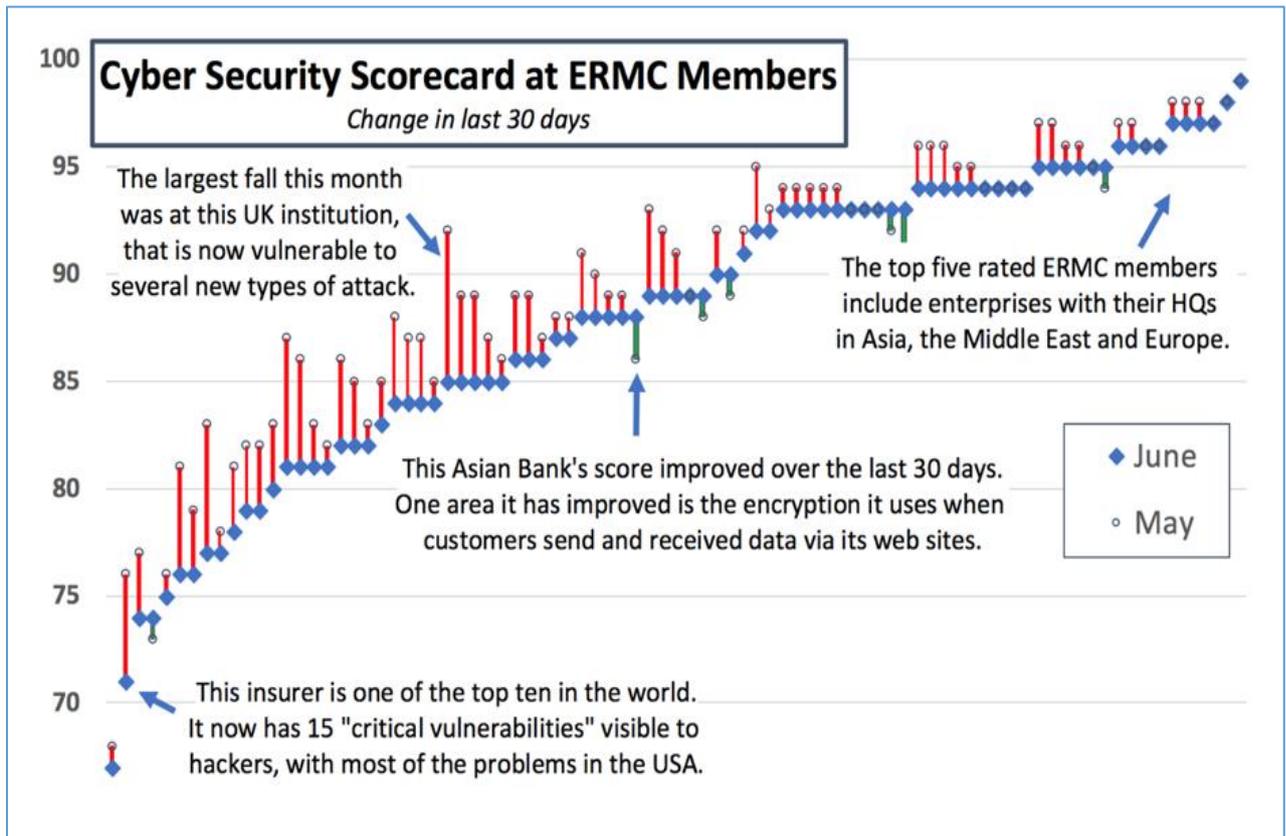
Broad decline in the cyber protection: In June, most Risk Council's members suffered a decline in their cybersecurity protection and an increase in number of system vulnerabilities visible for hackers. 64 organisations from 85 included to the sample experienced a drop in their cyber security score.

Wide variation in cyber security scores:

While 16 companies in the sample maintain a strong level of cyber protection (95 points and above), there are now 12 Risk Council's members with a score below 80. Statistically it means that these 12 companies are five times more likely to experience a significant breach, compared to the top half of ERM Council members.

A recent fiasco of Banco de Chile highlights an importance of monitoring the cyber security scores. In June, Banco de Chile reported that hackers had stolen \$10 million from the bank using a malware attack on bank's servers connected to SWIFT transfer network. In the days before the breach, Banco de Chile had a cyber security score of 80.

Overall, the financial services industry has been under intensive cyber-attacks in recent months. As a result, many financial institutions have become victims of hackers. In the last several weeks, in addition to Banco de Chile, two Canadian banks - Bank of Montreal and Canadian Imperial Bank - admitted data breaches. Recent cyber statistics suggests that across the USA 13% of 522 data breaches reported to regulators this year were at banks.





Credit Risk 2.0 – Rebooting the Banking Book *

** This is an edited excerpt from Technology Solutions for Credit Risk 2.0, 2018, a report published by Chartis Research in May 2018.*

Introduction: a ‘new normal’ in credit risk

The centuries-old mechanisms of credit, and the ways in which they are assessed and analysed, are in the throes of a revolution. Built on the emergence of new credit instruments, devised by the world’s Financial Institutions (FIs), and propelled by innovative new technologies that are increasing the speed, flexibility and risk profile of the lending market, this revolution is reshaping the credit landscape.

We believe a ‘new normal’ is emerging as a result – one we refer to as ‘Credit Risk 2.0’. It is defined by three key factors:

- The emergence of new ‘risk-aware’ accounting standards, prompted by new measures like International Financial Reporting Standard 9 (IFRS 9) and the CECL¹ regime. Both require FIs to radically alter how they assess credit risk and prepare for losses, particularly on the banking book.
- A new focus from regulators on market-linked contingent credit in the trading book² (such as Credit Valuation Adjustment [CVA], Standardized

Approach for measuring Counterparty Credit Risk [SA-CCR] and Fundamental Review of the Trading Book CVA [FRTB CVA]). In the wake of the financial crisis, FIs are moving to adopt clearer, more stringent and sustainable practices for measuring and managing counterparty risk.

- New computational approaches to assessing credit and credit risk – changes to the underlying mathematical models, such as new graph-based approaches and other similar innovative techniques.

Real revolution in the banking book

While the Credit Risk 2.0 revolution is driving significant changes in the trading book³, trading-book systems and processes will continue to evolve and cope – as they have been doing for years. By contrast, the methodologies and technology underpinning models in the banking book are undergoing a profound structural revolution as we enter the new credit risk landscape.

Previously, FIs analyzed credit and its risk on the banking book in a much more ad-hoc way than on the trading book. Many FIs lacked even internally defined standards for assessing metrics like performance, sensitivities and risk levels, or for attributing risk.

¹ Note that when we refer to CECL in this paper, we mean the US Generally Accepted Accounting Principles (GAAP) Current Expected Credit Loss (CECL) accounting standard.

² Credit generated from derivatives and other instruments, where changes in market value can impact the amount of related credit exposure.

³ These include a ‘credit transformation revolution’, as FIs increasingly take on highly collateralized exposures, converting credit risk into contingent market risk and operational risk, and requiring a range of new analytics.



This is changing as Credit Risk 2.0 comes into focus. The banking book 'value chain' is operationally complex (see Figure 1) – many credit risk solutions are embedded in broader applications (such as loan processing or underwriting systems). We believe that to cope in the new normal FIs need a new methodological and technical structure for their credit risk processes, one that can account systematically for the many idiosyncratic properties of banking book products. This structure should encompass frameworks to:

- Analyse the performance of loans.
- Integrate behavioural factors.
- Properly analyse the risk embedded in the contingent components of banking book products (so-called *optionality*).

Rebooting the banking book

The problem, however, is that the processes currently in place in the banking book are not robust enough to cope with the demands imposed on them by Credit Risk 2.0. While some of the largest banks have recognized this issue, and are luckily well placed to tackle it, these new developments are not within the traditional scope of most banks' processes.

Analytics for the banking book need new data and computational components to address the new risk-aware world that is being ushered in by IFRS 9 and CECL. These components must include analytical techniques and data storage frameworks that incorporate the institutional, economic and cultural context within which a given borrower operates. They should include:

- Databases that are conducive to time-series analytics.
- Simulation engines to manage the future distribution of default risks.
- Behavioural analytics.
- Dynamic data models.
- Client hierarchy management.

It's also important to consider where credit risk sits in the operational value chain in the trading and banking books. This is crucial: credit risk almost always exists as part of a value chain, and very rarely as a distinct component in a software product. Few vendors offer pure credit risk solutions. In this increasingly complex credit environment, FIs – and vendors – must be able to manage the whole value chain, not just credit risk. And by understanding where in the operational process credit risk sits, FIs can ensure they have an efficient process in place.

The current state of credit risk technology

Much of the technology environment supporting credit risk and credit management in FIs is sprawling, lacking a centralized infrastructure. Typically, FIs use a complex web of separate application environment clouds and legacy systems linked by relatively lightweight thin connections and messaging-oriented protocols.

Components of credit analytics are often embedded within a larger trading or risk management framework, either because that is how the institution's systems have developed organically or as the result of a specific deployment. Vendors seldom offer discrete credit analytics systems, instead deploying packages that offer both analytics and their supporting services within one solution.

Reaching an ideal solution

In an ideal world, we believe that all major credit analytics would be organized around core intermediate analytical techniques such as those shown in Figure 2, regardless of whether they are used in banking book or trading book environments. We would also include common data frameworks, a common computational infrastructure and a standard



set of core process engines on which credit risk applications can be built.

In theory, new, nimble digital FIs or innovative FinTech startups may be able to build such an environment. The reality, however, is far more complex. The different streams of credit analysis – for the trading book and the banking book – remain operationally separate and rarely share systems or frameworks (except for regulatory reporting at the level of the consolidated enterprise or business line).

In addition, converging methodology, techniques and processes remains a work in progress, with considerable challenges and hurdles. While the benefits of this ideal architecture are evident, achieving it is a complex task that requires FIs to uproot their existing systems. And for many FIs the risk that projects may run over deadline, cutting into their operations and profits, is simply too great.

Conclusion: building a workable solution

To solve the challenges highlighted in this paper would be to embrace an ‘ideal world’ – one we expect few FIs to achieve.

Nevertheless, we believe that by making judicious use of core technology elements and properly assembled credit analytics, FIs can develop an effective credit risk system, building on some of the same ideas.

Increasingly important in achieving this – and offered to varying degrees by the vendors in the space – are several key components:

- **Entity and hierarchy management.** We believe that credit hierarchy is fundamental to credit risk analytics and effective credit risk management – not an add-on. Chartis’ advice to vendors that offer default risk analytics

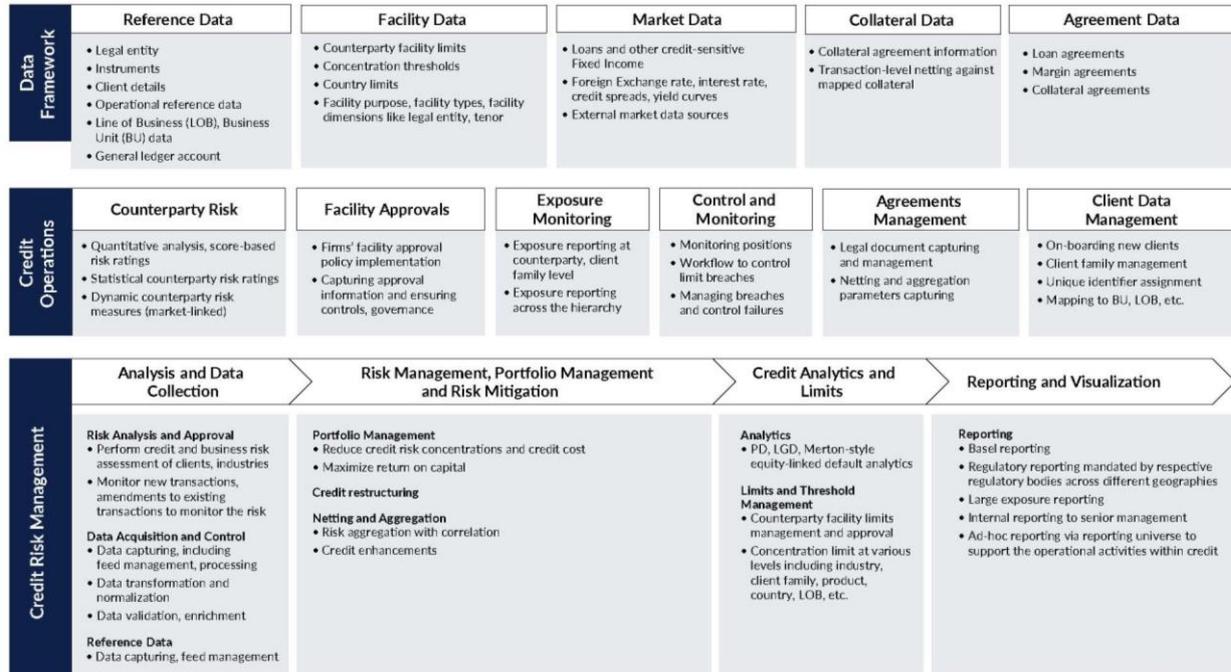
is to bolster their client hierarchy management frameworks by incorporating more complex counterparty relationship graphs, to help FIs better understand the relationships between counterparties.

- **Credit Portfolio Management (CPM)** has become an important component in credit risk solutions as accounting standards like IFRS 9 and CECL have forced FIs to look for better ways to optimize their capital allocation. CPM technology enables FIs to assess the risk level of an entire portfolio, and shift borrowers between multiple portfolios to minimize the institution’s overall credit risk.
- **Behavioural Analytics (BA)** will prove a key area in future credit risk environments, although so far vendors are just starting to offer relevant functionality. Rather than assuming that borrowers act rationally in their economic activities, BA attempts to incorporate more sophisticated assessments of how they will act under different macroeconomic scenarios or within the context of the specific products they have been offered.

Ultimately, the future is joined up and, while credit analytics can occur independently as a set of data services or analytics, we also see them embedded across a variety of trading, risk management, underwriting and capital management tools and frameworks. This is why a broad view is essential – when developing a comprehensive, robust and multi-dimensional picture of the market serving the needs of Credit Risk 2.0, it is important to consider a very broad set of vendors from a variety of spaces.

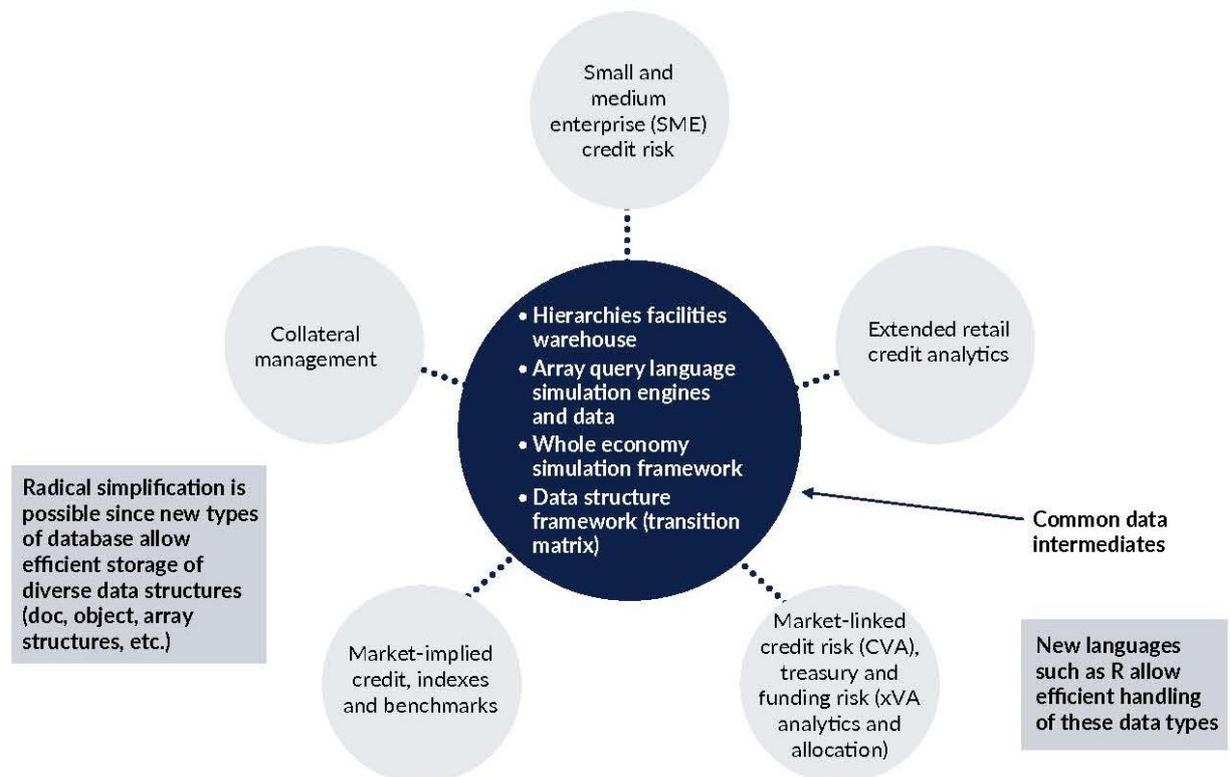


Figure 1: The credit risk value chain in the banking book



Source: Chartis Research

Figure 2: The 'ideal' credit risk system



Source: Chartis Research

