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knowledge for the PRMIA community

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editor introduction

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The January 2020 issue of Intelligent Risk has special significance, as the Risk Year in Review of 2019 witnessed a global panorama of new and old risks in a high state of flux. PRMIA received a broad range of articles from members, with unique perspectives. This issue features articles that focus on: Complex data risks with the adoption of AI, Management of AI risks, Evolution of IT risk, Future Risk Capital Model, US Stock Market (growth potential or risk of falling?), and What challenges exist with the transition from IBORs to RFRs.

Looking back at Intelligent Risk's 2019 publications, the quarterly issues featured a wide variety of articles, covering Preventable Risks (April): Controls, monitoring, governance and training, data quality, IT integrity and advanced technology; Strategic Risks (July): Insights on cybersecurity, digital transformation, climate change, business concentration, LIBOR's demise, algorithmic trading and managing strategic risk; and External Risks (October): Trade wars, pandemics, cyber-risk, innovation to the core, liquidity, and culture risks.

We hope you enjoy reading these thoughtful and articulate pieces as much as we did editing them.

management of AI risks

How financial service organizations can mitigate the risks introduced by AI

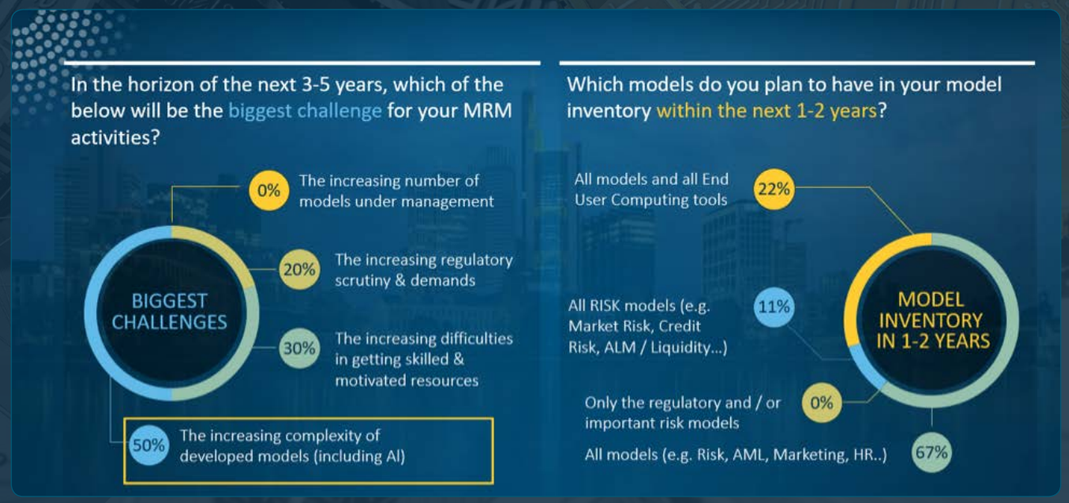
by **Peter** Plochan

Across industries, analysts expect a dramatic increase in adoption of Artificial Intelligence (AI) technology over the next few years. In financial services specifically, the appeal of AI technology is strong and growing, outpacing many other industries.

But what about the challenges of AI technology? Artificial intelligence adds more fuel to the existing fire within banks' modeling ecosystems. One reason is that it requires increased emphasis on core areas that already demand significant attention – such as data quality and availability, model interpretability, validation, deployment and governance. This consideration can make banks hesitant to move full speed ahead with their AI projects.

At the same time, some factions of the industry are calling for a cautious approach toward AI. Leading the pack are model risk management and model governance professionals responsible for protecting their banks from losses caused by use of improper or inaccurate models. Their concerns are underscored by the recognition that all AI models – not just those used for regulatory purposes – will eventually end up in the bank's model inventory, under their domain, and all those models will need to be governed.

Figure 1: Perspective on AI from the MRM industry leaders



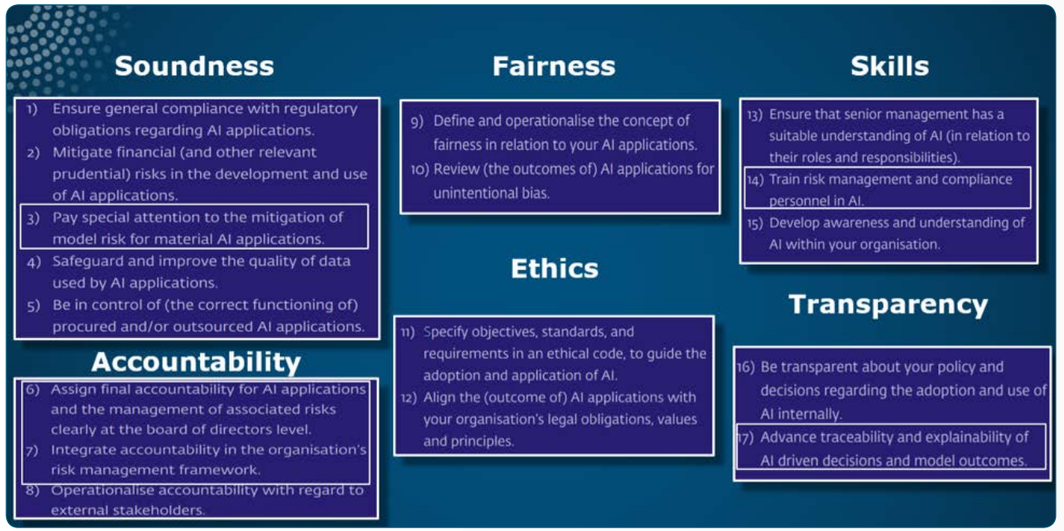
Source: SAS Model Risk Management Customer Connection event - survey

According to our survey (Figure 1) performed among the MRM industry leads attending the SAS MRM Customer Connection event:

- In the short-term horizon (1-2 years), they plan to include all models used within the bank into their model inventory & model governance, thus including all AI models as well, irrespective whether they are used in Risk, Finance, Marketing or anywhere else.
- In the long-term horizon (3-5 years), the increasing complexity of models (AI) is the biggest challenge for their MRM activities

In parallel, the banking regulators who are also concerned about the risks that using AI models entails are taking first actions. For example, the Dutch Central Bank (Figure 2) and the Danish Financial Supervisory Authority recently issued general principles and recommendations for use of AI in financial services.

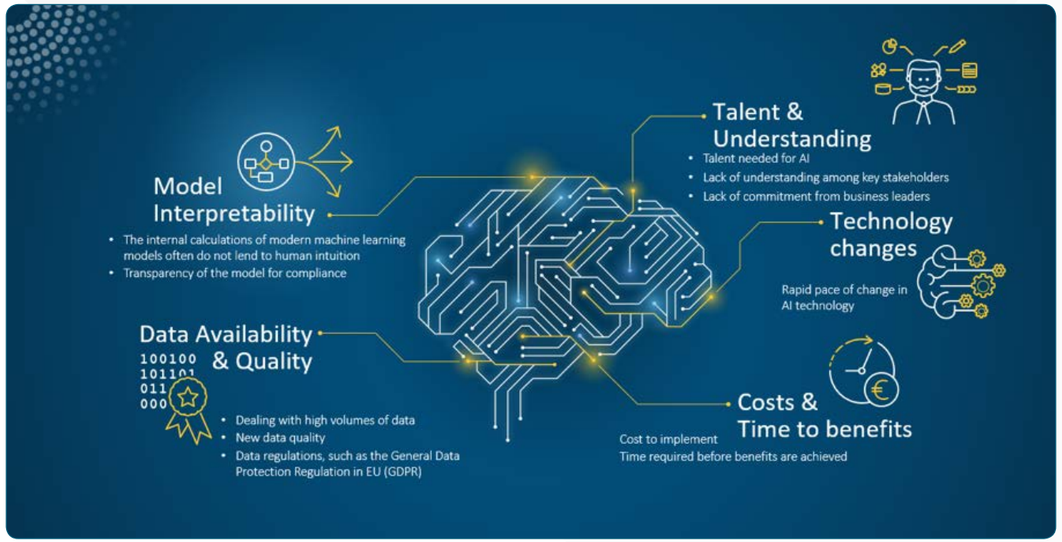
Figure 2



Source: https://www.dnb.nl/en/news/news-and-archive/DNBulletin2019/dnb385020.jsp

As the industry increasingly adopts AI, it becomes essential to know how to confront the challenges raised by this promising technology – and with the right approaches, that may not be as complicated as you think. Let's examine five of the most common stumbling blocks banks will need to address on the road to AI mastery (Figure 3), along with five overarching "fixes" that can keep those obstacles from halting AI progress and in the end mitigate the AI related risks.

Figure 3: Key Challenges of AI adoption



Source: SAS and GARP: Artificial intelligence in banking and risk management survey

Challenge #1: **Model interpretability.** The fix: **Create explainable AI.**

Neural networks and other machine learning models are quite complex, which makes them harder to understand and explain than traditional models. This naturally leads to some degree of risk and demands an increased level of governance.

To avoid fines and remain compliant but also to minimize any bad business decisions taken based on AI models, banks must be able to explain their models and the rationale behind them – in-depth – to regulators and auditors but also to the internal stakeholders. Fortunately, there are several things that can be done to make it easier to understand and explain complex neural networks and other ML models:

- Introduce a visual interpretation of modeling logic to clearly illustrate all the model's inputs, outputs, and dependencies.
- Establish a central model governance and model management framework. This will avoid creation of multiple, parallel AI "islands" within the organization, each doing its own thing.
- Use high-performance computing capabilities to automatically perform variable importance and sensitivity analysis when needed and be sure to stress test the inputs to AI models.
- Perform frequent benchmarks, and regularly compare champion to challenger models.

If your data scientist leaves, all the above will help you to retain the critical in-house know-how & IP about your complex models.

Challenge #2: **Data availability and quality.** The fix: **Feed a steady supply of healthy data.**

For good reasons, AI technology is data-hungry. AI and ML models can consume vast amounts of big data, and they improve automatically through this experience – that is, by learning. The result is greater accuracy and predictability over time. But to no one's surprise, the adage "garbage in, garbage out" still applies. How can you make sure you're feeding your AI technology healthy data?

- Manage data well. If you provide AI technology with a steady supply of trusted, good-quality information, your models can make good recommendations. Getting it right entails setting a high bar for governance. That includes following best practices for data preparation and having specific measures for, and processes to ensure, data quality. These practices should be an integral part of your end-to-end modeling landscape, so your data will be ready for use in advanced analytics and modeling.
- Take full advantage of the latest technology – such as automation and distributed data storage – and make sure you can support all the different formats and structures AI models need.

Challenge #3: **Cost and time to benefit.** The fix: **Jump-start AI through focus.**

Too often, teams leap into an AI project without thinking through the rationale or implications. The reality is that some problems can be solved with traditional business intelligence tools and won't significantly benefit from adding artificial intelligence. Other times, the rationale for an AI project isn't clear, so it lacks buy-in from executive-level champions. You can decrease the time and cost of getting benefits from your AI technology by taking the following approach:

- Always think through the business problem you want to solve before you choose your methodology or technology.
- Start small – but do so with an eye toward how you can scale the project. Then roll it out enterprise-wide when ready.
- Reuse existing resources, both human and technical. Rely on your existing talent with business knowledge as much as possible rather than always hiring costly, external data scientists that often lack the understanding of your operations.
- Establish one way of working across the entire enterprise, both at the process and technology levels.

Challenge #4: **Talent and understanding.** The fix: **Humanize AI.**

To succeed with AI, you'll need the right people to design and run your projects. Key stakeholders and decision makers should be able to clearly express what you're trying to accomplish with AI, and what effects each AI project will have on people inside and outside the business. But how do you attract and retain the right talent – people who understand your goals and can help "humanize" AI?

- Make it a priority to get the right resources and nurture them along the way. Attracting – and keeping – top-notch resources could be an ongoing struggle. It helps if you embrace concepts

like citizen data scientists, open source, automation and standardization. It's also important to give your data scientists the tools they need and to support their preferred ways of working. In turn, they're more likely to stay engaged with what they're doing and focus on how they're adding value.

- Promote transparency and continually build awareness about AI and model risk management. This helps build trust and makes it easier to rally support to successfully establish AI where it's needed throughout the business.

Challenge #5: **Continual technology changes.** The fix: **Operationalize AI.**

How do we move abstract concepts about AI off the drawing board and out of data scientists' heads so they can be used in daily operations? Here, technology choice plays a crucial role. You'll need an AI platform that can:

- Automate labor-intensive manual processes within your end-to-end modeling life cycle.
- Offer the level of performance needed to make use of the latest technologies, such as GPUs, containers, edge or cloud deployment, and LIME and ICE model interpretation frameworks.
- Centralize model governance and apply it across all models (not just AI models) – as well as the entire modeling life cycle.
- Integrate with existing systems and be reusable for other purposes.

what's next?

The next wave of AI is coming, and it's coming fast. As the number of AI models in development and deployment rises, model risk management teams will feel the crunch.

Whether the pressure to manage evolving model risks comes from internal or external stakeholders, institutions should start now to establish model risk management processes that are AI-ready. Then they can proceed with AI initiatives in an efficient, governed manner. As questions about AI models surface, institutions that have taken the time to evaluate and adopt "fixes" for their AI challenges will reap the benefits of their proactive approach.

author

Peter Plochan

Peter Plochan is the Principal Risk Solutions Manager at SAS. As a global domain expert, he helps organizations leverage the latest analytic technologies to solve their challenges around finance and risk regulations, enterprise risk management, risk governance, risk analysis and modelling.

Plochan has a Master's degree in banking and is a certified Financial Risk Manager (FRM) with more than a dozen years of experience in financial sector risk management. Before joining SAS in 2014, he assisted various banking and insurance institutions with large-scale risk management implementations, including working internally and externally as a risk management advisor at PwC.

digital finance & innovations in microfinance

by **Faheem** Ali

Technology has enabled institutions and individuals with faster and more secure ways for transactions, resulting in increased efficiency. Microfinance, in particular, benefitted from the integration of digital lending in the legacy systems.

Technology is taking over every critical aspect of our day-to-day life, with artificial intelligence, Internet of things, and voice assistant. The waves of transformation are fast penetrating the microfinance sector, which is thereby gaining momentum to emerge as the novel digital system by rising over the traditional time-consuming loan processing procedures.

Microfinance institutions are thriving on the back of their competency to complete the loan quest for low-income yet aspiring business people. However, somehow they still lack the touch of digitalization to offer 'at a tap' service.

Here are a few ways in which it is reshaping the landscape of microfinance on the capabilities of digital solutions.

is digital microfinance the next big leap of fintech?

Gartner says that most banks will be irrelevant by 2030. FinTechs raised a record $39.6 Bn in 2013 says Economic Times. A large number of FinTech stakeholders are ready to disrupt the conventional means to finance; however, customer acquisition and capital investments are the two dilemmas that are holding them back.

If perceived as long-term payback opportunity, the potential of digital microfinance solutions is enormous. So, looking at the benefits such as convenience and safety that it offers to lenders and loan-seekers, digital microfinance is a significant yet effective move to unlocking lucrative prospects.

what are the key technologies that would fuel the digital shift of microfinance?

Machine learning (ML), Artificial Intelligent (AI), Cloud Computing and Big Data will turn out as critical technologies for microfinance to understand the lending cycle and predict crucial parameters such as repayments.

Today AI, ML and Robo-advisory are not mere buzzwords but emerging realities, as Chatbots have already started replacing the call centers; however, the uptake of technology can only happen with an interim period of assisted technology.

Algorithm-based lending (credit scoring model) will help lenders do away with their current diary-oriented data and shift towards digital records, which will have complete details regarding loan-seeker, interest rate, due payments, etc. The technological leap will make lending and seeking more accessible and transparent and add a layer of security to microfinancing.

are digital microfinance solutions going to boost the customer base or customer-centric model?

If there is one thing that separates and differentiates between offline and online mode of operation, it is a convenience and easy accessibility from even the remotest of the region. The use of smartphones and mobility solutions allow micro financers to adopt a customer-centric model and personalize services based on individual preferences and tastes. It helps in creating customer experiences that not only streamline the whole process but also increase the engagement between lenders and borrowers.

With the help of information gathering and dissemination just a click away, customers will find it easy to recognize your microfinancing brand when it is placed in the app store. Numerous digital platforms of exposure, such as social media, will also offer microfinance institutions the leeway to distinguish their businesses from competitors and acquire a more extensive customer base.

what are the risk factors associated with digital finance solutions?

The key question on technology / DFS risk factors is: "Am I able to measure the service level from an end-user perspective?"

Technology Risk refers to technology failure that leads to the inability to transact. It is closely linked to operational risk. If technology failure is persistent and severe, the regulator may step in and impose penalties or revoke the license, or customers may abandon the service.

However, cash-based systems are more prone to the prying eyes of robbers, and cases regarding fraud cash further increase the vulnerability of the microfinance ecosystem. Storage, deposition, and withdrawal of money also engage several resources, which can otherwise be handled with the help of a handful of resources.

Many organizations have created digital tools for their loan officers, some have incorporated credit scoring tools into their underwriting processes, and many have switched to digital loan disbursements and repayments to mitigate the risk of operations and technology.

can General Data Protection Regulation (GDPR) be a hurdle to digital micro finance systems?

In the data-centric world, central agencies evince a deep concern regarding the protection of data mounting up every single day. In such a scenario, data policies like GDPR can act as a barrier, to some extent.

However, the critical question is: Who poses the greater threat to corporate sensitive data: Insiders or Outsiders? What is nowadays referred to as Cyber Risk is now part of the Top Risks discussed regularly at Board meetings around the world. And this is a fact not only for financial services firms or big banks.

In order to mitigate risk associated with data, it is vital to invest in utmost cybersecurity measures that will save not only these institutes but also customers' lending loans.

can traditional microfinance institutes also join the digital movement (digital transformation)?

Though the shift from a conventional operational system to a digital one may seem overwhelming at first, microfinance institutes can jump into the bandwagon of digital solutions at any instance of time.

MFIs swear by their traditional underwriting methodologies, whether they involve group guarantees or individual repayment capacity assessment. These high-touch methods often yield repayment rates that other lenders only dream of. A key to success is that the methodology not only predicts the ability of a customer to repay, it actually increases motivation to repay, through peer pressure personal contact and the promise of continued access to credit.

Microfinance may wish to explore hybrid models that combines – Hi-Tech and Hi-Touch. They may find it possible to focus on market segments that are hard for digital lenders to reach. In all cases, they need to advocate for high standards of consumer protection to be enforced in their markets, to avoid being crowded out by predatory lending.

The switch from tradition system would mean handing over the data to your tech-partner and expecting a well-organized system in return.

Besides, your resources need to have in-depth information regarding the transformation, and proper training sessions should be conducted to have a seamless work environment, once you go digital with microfinance solutions.

a quick glance into the future of microfinance

Once the microfinance sector gets the slice of digitalization, there is no going back. In many cases, such as the MFIs that are members of the Microfinance Network, they are already moving along the digital journey, but few have completed that transformation.

Consistent involvement of technology will only bring better business outcomes, customer convenience, and transparency. Though big data is the big aspect of the microfinance solutions in today's time, artificial intelligence and cryptocurrency will be its future and the days aren't far enough when robots bring in utmost precision to your lending business.

In a nutshell, MFIs have the chance to use digital tools to pursue their missions in an increasingly digital transformation world. The key is to embrace the change that will certainly occur and to leverage these changes to innovate and grow.

My warmest and best wishes on the digital transformations for the year 2020 and beyond!

author

Faheem Ali

Faheem Ali is an international speaker and has a strong management background in the Inclusive Finance and Banking domain with insightful understanding of the financial sector in various markets in Central Asia, Asia Pacific, and Africa.

Faheem has extensive experience in financial product development, digital financial product development and deployment, corporate and product marketing strategies formulation, transformation of MFIs, and credit operations. He has worked in different countries and provides training, consulting, and executive coaching services for inclusive financial service providers. Faheem has also conducted market research and numerous sessions/workshops in East African and Sub-Saharan countries, Central Asia, Asia Pacific, West Africa, and Gulf countries for financial institutions, mobile money operators, and non-financial providers including NGOs.

Faheem's other areas of interest include digital financial services, risk management, social performance management (SPM), capacity building, and youth inclusive financial services.

risk capital, innovation, and growth

by **Debashis** Banerjee

the current risk capital model

The framework of risk regulations and guidelines applicable to domestic and global banks and financial service market players has been strengthened subsequent to the 2008 financial crisis. Corrective measures have been taken, and new and improved risk regulation has been introduced, and subsequently the revised BASEL III framework has been implemented.

The BCBS is the primary global standard-setter for prudential regulation of banks and provides a forum for cooperation on banking supervisory matters. Its mandate is to strengthen the regulation, supervision and practices of banks worldwide in order to enhance financial stability. The objective is to improve and strengthen the banks' corporate risk governance, transparency, disclosures and ability to absorb shocks arising from financial and country-specific stresses.

The levers used to achieve this objective and the intended risk regulation standards are, primarily: risk capital (CET 1 requirements), liquidity coverage, approved risk model/approaches and guidelines, disclosures, supervisory review and reporting. The entire focus is on how to deal with worst case stressed scenarios, in order to protect counterparties, all clients and banks. This prepares banks and other financial institutions to deal effectively with negative scenarios that occur rarely/once in a few decades. While the idea of risk capital and liquidity regulation is good, it has repercussions on global and regional financial services market players.

The entire risk regulation framework is designed in such a way that establishes a good amount of capital but discourages innovation. Banks and financial institutions have locked up billions of dollars to achieve the 10.5% of RWA capital ratio considered necessary to meet a worst-case scenario with a probability of its happening of less than 1%. However, I believe that the objective of risk regulation should be not only to protect global and regional financial institutions, but also to work as a catalyst to promote innovation, thereby increasing the available capital base to deploy it, improving return on capital and generating employment opportunities.

future risk capital model – the way forward

How can risk regulation be improved to assess risk capital level in a way that achieves the desired state discussed above?

To begin with, risks need to be integrated into corporate strategy and execution. History and the recent meltdown in the global economy have taught us to treat risk management and ethics as part of business strategy and a value creator. The best approach to achieve value creation is through the coupling of risk management and business strategy. Mission, objective, and strategy should be analyzed within the ambit of the enterprise risk program in an organization. This top-down approach to derive risk appetite will help to embed risk culture into the strategy and execution.

Stress testing and capital planning

The impact of stress testing and capital planning, and incorporation of the same into risk appetite assessment, is the critical part. The following approach can be used to stress test the intermediate output of an assessment exercise before finalization:

- Risk capital level I – Risk capital sufficient to fulfil the enterprise's risk appetite for conducting normal business activities within a 95+% probability (the risk capital level which suffices for 95% of all risk events will have to be assessed by BCBS and individual financial institutions/banks before finalizing)
- Risk capital levels II and III - Sovereign risk, systemic risk, and macroeconomic factors

Before conducting a stress test, the following capital planning metrics need to be evaluated and incorporated:

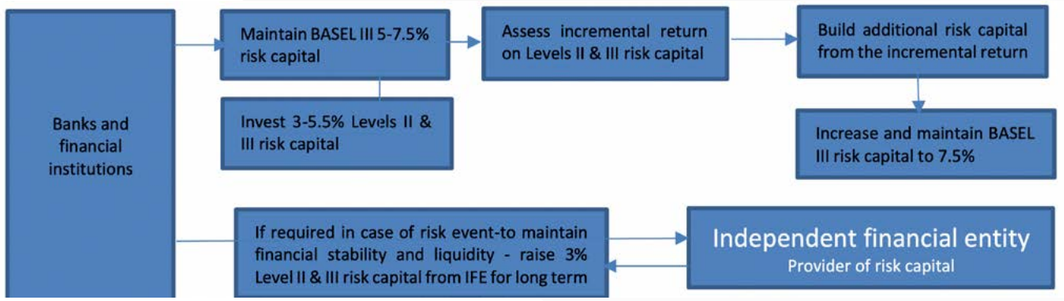
- Unfavorable and favorable outcomes (a favorable scenario for one business unit may lead to an unfavorable scenario for another business unit, and vice-versa)
- Correlation effects (direction and coefficient)
- Concentrations
- Aggregation and independent, identical distribution
- Distribution

Classification, definition and assessment of risk levels

Once the various scenarios (mutually exclusive and/or independent) are analyzed and shortlisted, banks must calculate the level of risk capital required to sustain their business in each scenario. They need to quantify their risk capital based on the BASEL III+ capital assessment. Total capital requirement as per BASEL III is 10.5% of RWA. Based on their risk appetite assessment, banks must then classify their risk capital into Levels I, II, and III and the part of 10.5% that will be allocated to risk capital Level I. Maintaining 5% – 7% Level I risk capital may suffice for internal purposes, but the appropriate Level I risk capital amount should be decided by the banks and the BASEL committee.

Financial institutions should maintain an internal Level I risk capital in the range of 5-7% of RWA.

The effect of this approach will be to free up Level II and III risk capital at banks. This freed-up capital can then be used to generate more returns and introduce innovative products in the market. Financial institutions can apply an incremental risk capital approach that leads to incremental returns. This risk model can potentially pull the world economy higher and lead to innovative products and services, employment opportunities and increase in per capita income.

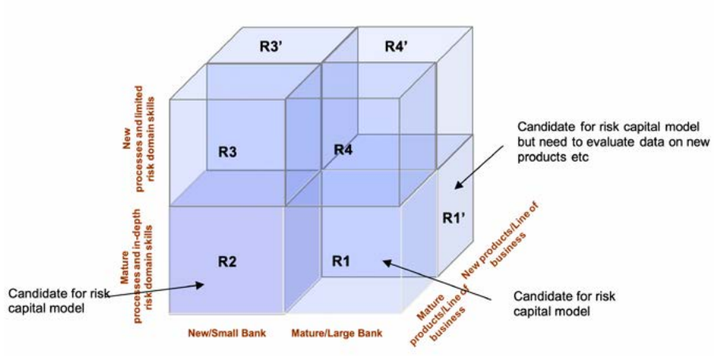


The role of an independent financial entity to source and manage risk capital

Sovereign governments, with support from G-SIBs and D-SIBs, must establish an independent financial institution (IFE) that will provide Level II and III risk capital to meet risk capital regulation across the industry. This independent financial entity will be funded by government and industry/G-SIBs/D-SIBs and will have financial, administrative and decision-making independence to manage its own affairs. The independent entity will follow the guidelines of regulators/the sovereign and report accordingly. Banks and other financial players may request Level II and III risk capital when required and keep the capital until they regain the required financial stability. The capital will be paid back with agreed interest to the IFE. The IFE will charge interest based on its [cost of capital + margin].

Evaluation of Banks and Financial institutions eligible for the new risk capital model

The diagram below illustrates the high-level approach for an eligibility assessment to qualify for risk capital model.



conclusion

Now that banks have put the 2008 financial crisis behind them, it's time for regulators and sovereigns to adopt a new risk capital model that promotes innovation, efficiency, and economic growth as well as financial stability.

author

Debashis Banerjee

Debashis has more than 18 years of global experience in his professional career. He has worked across financial services, consulting, enterprise risk, and information technology sectors in the fortune 500 companies, and effectively led large multicultural teams at multiple locations. He is presently leading the company as President and CEO and he provides leadership and strategy to global business units and alliances.

He is regularly presenting to global audiences on topics such as strategy and execution, financial services, enterprise risk, and leadership. He has several innovative papers and publications to his credit in the last few years and helped the global financial services players in their approach to handle the challenges effectively. He is part of Board and Advisory council in global organizations and Institutions. He has graduated from Harvard Business School in general management with focus on strategy, leadership, execution, and innovation and has earned the PRM from PRMIA.

negative rates from two perspectives - banks and pension funds

by **Alexander** Marinov

Banks and Pensions funds each serve a very vital role in the financial system:

Banks – intermediate between borrowers and savers, while generating income from the spread between what they charge on loans and the interest they pay to incentivize people to keep their money in the bank

Pension funds – provide deferred income for retirement in exchange for regular payments during a person's working years

Historically both types of institutions have been able to function successfully due to traditionally healthy interest rate levels. However, the financial environment has changed quite dramatically in a number of ways since the Global Financial Crisis (GFC) of 2008/09.

the effect on banks

For banks it has led to severe erosion of profitability due to a number of factors. For one, the monetary policy of the ECB (and a number of other central banks) has made holding cash so pervasive that some banks have been forced to resort to unorthodox measures to discourage savers from depositing their savings. For example, a small Swiss bank began charging customers for holding their deposits in 2016. That didn't bode well for people who wanted to get a return on their savings, who thought that banks would be able to offer them a stable return even in a tumultuous market environment.

Negative interest rates have been wreaking havoc since June 2014, when the ECB cut its deposit facility rate (the Eurozone's base interest rate) to -0.10%, and subsequently took similar action on four more occasions, as a result of which the rate currently sits at an unnerving -0.50%, effectively charging commercial banks to store their deposits with the central bank. A similar case has been present in Japan since 2016. But why was this done? It was done with the aim to force banks to increase investments to the wider economy and thereby stimulate growth, or so the thinking at the time was.

Sadly, that plan failed to materialize. Banks have since been sitting on record levels of liquidity. The same scenario has repeated itself in 9 developed countries, which has caused their yield curves to reach negative levels.

the effect on pension funds

Pension funds, which are by nature risk-averse, would normally invest a significant chunk of their holdings in high quality sovereign bonds that generate steady and predictable cash flows, with a low risk of incurring losses. This ensured that savers' projections with regards to post-retirement income would be met. Pre-2008, such government bonds would have been sufficient to protect the real value of pension savings and generate some growth.

For example, right before the GFC the 10-year German government bond was yielding around 4.0%. Ten years later, the same 10-year German government bond is yielding -0.36%. The situation is comparable to other major EU countries, including France and the Netherlands. Even European economies which were once at the brink of economic collapse are barely giving investors any returns – 10-year Greek bonds yield 1.36% and Italian bonds of a similarly tenor give just 1.18%. At this point in time there are close to $10 trillion outstanding government bonds that yield negative rates globally, according to Fitch, of which close to two-thirds belong to Japan. The remaining ones are located in Europe, where the ECB and several Scandinavian countries have been forced to keep rates at record low levels. In addition, there is a clustering in the remaining positive yielding bonds, such as US Treasuries, which is creating market distortions.

Things are no better with equity indices, which are currently at record highs, which makes them extremely expensive to invest in. Also, as recent events have shown, there is still extreme volatility, as the sudden drop in Q4 2018 and increase in Q1 2019 showed. If anything, markets are becoming more unpredictable.

Given the current pervasiveness of negative rates. different financial institutions and people in various countries have reacted differently.

european banks

In Europe, in the case of Switzerland, this was followed by an increase in property prices. Such investments, in the eyes of consumers, were seen as a better return than simply holding cash. A bank in Denmark was even forced to charge a negative interest rate mortgage at minus 0.5% and also a negative savings account that charges millionaires 0.6% per year. The situation is good news if you are trying to buy a home for the first time but very bad for savers and people. In Japan, the situation has meant that banks haven't diversified their operations, and the only viable option in an overcrowded industry is to implement automation as a means of reducing their employee headcount to try and reduce costs. In Germany, banks are pushing to pass the associated costs to depositors, which would be highly controversial in the EU's largest economy.

Another area where banks are facing difficulty is providing loans to viable businesses.

Unfortunately, this has led to the creation of "zombie" firms – a term used for companies that are not profitable enough to survive on their own, and which are only able to service their interest payments but not the principal of their loans, as defined by the Bank of International Settlements.

This is especially troublesome because banks that have loaned to these “zombie” firms in the past are undercapitalized, due to the high potential delinquency of these loans. Even if repayment requests were sent to these firms to repay their loans, the overall scenario would be that they would simply default and the banks would be left holding huge losses on their loan portfolios. So, the only option is to provide them with additional loans just to keep them afloat. The unintended consequence of this is that firms which would have normally gone under, thus making way for younger and more efficient enterprises, linger on for a number of years, thereby stifling the investments which startup companies need to grow. This problem has become very pervasive in Europe. It is estimated that at least 10% of the companies in France, Germany, Italy and Spain are zombies. But this problem is also not uncommon in Northern Europe, especially in the UK.

Just in the UK it is estimated that, from a set of 21,000 companies, close to 8% display zombie features. This is especially troubling news given the looming Brexit, which could put severe strain on companies. In Italy, it is estimated that 4% of companies are zombies, which actually drain 20% of the total capital. It is estimated that about 15% of all loans held within Italian banks are non-performing, which raises a lot of red flags.

european pension funds

For pension funds with their strict mandates, the situation is even more precarious. If they cannot generate enough return, pensioners won’t have the necessary savings in their post-retirement years. But how have they reacted in the current environment?

In Germany, major pension fund schemes are facing very difficult decisions. Most pension funds in Germany are not allowed to invest more than 35% in risky assets, which means that the majority of their investments are in fixed income and properties. The current projections are that, in the coming years, Germany’s pension funds will be forced to allocate a significant portion of their investments towards equities and illiquid assets such as private debt, with the aim of generating higher return. These private debt investments will most likely be allocated towards projects linked to energy, power, water and transportation, as they offer significant illiquidity premiums. However, such projects also bring a lot of uncertainty because they are extremely difficult to sell in times of a liquidity crisis. Also, they are exposed to even bigger risks than normal investments and have to be managed in a responsible manner.

other countries

In Japan, which has for years suffered from low yields, funds have started to invest more actively abroad. A prime example is Japan’s Government Pension Investment Fund (GPIF), which announced that it would allocate 5% of its €1.25 trillion assets into alternative assets. It has even dropped its government bond holdings from 60% to 35% during a five-year plan, which was in the making since 2014. Still, change is slow and troublesome.

As an example, two of the largest US pension funds have allocated close to 29% of their portfolios to such alternative investments - a mix of real estate and private equity. A similar case is found in Canada, where the largest pension funds have allocated 31% of their assets to alternatives. In Europe, Nordic funds prefer to invest in local markets and especially in real estate, with varying levels from 3% to 31%, while Dutch pension funds have moved 17% of their assets towards alternatives. As a final note to mention, in the UK several pension funds also pursue a very active strategy when it comes to such investments.

But, as shown above, these investments are highly risky and could lead to significant losses if interest rates rise and/or default rates increase for unprofitable businesses.

no clear-cut solution

The extraordinary market environment has pushed both banks and pension funds into highly unusual territory. For the banking side, it means that urgent action is needed to recapitalize bad banks and limit the overall economic impact of zombie firms, in order to stabilize the performance of more efficient companies and bring new vigor into the otherwise struggling EU economic framework. Also, it means restoring the confidence of savers that they can get a viable return on their savings. For pension funds, lack of viable returns in the bond markets has pushed them to riskier and more opaque investments, especially in the real estate and private equity space. Returns from such investments can be very profitable, but they are also extremely risky and not that liquid in case they have be sold to meet unforeseen liabilities. There is no clear-cut solution to these issues, but the alternative might be grimmer if no action is taken.

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setting an effective external risk management program

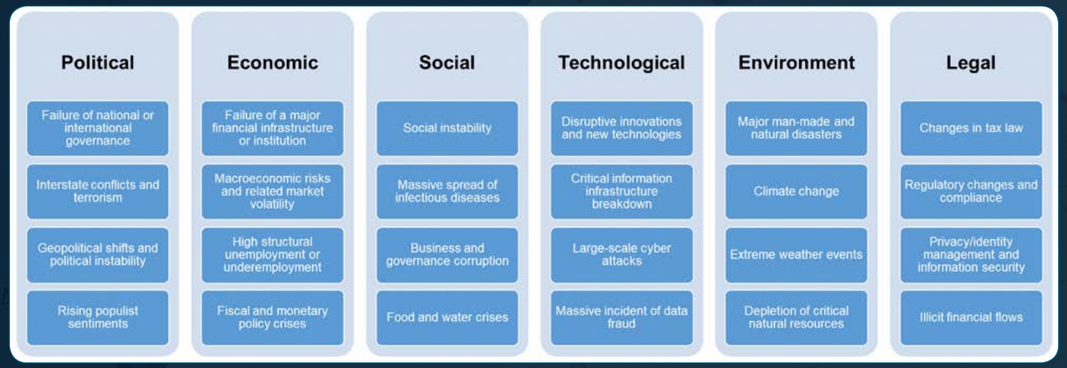
by **Famien** Konan

Unlike preventable and strategy risks, external risks are beyond an organization's influence or control. Examples include natural disasters such as the 2010 Iceland volcano eruption, major macroeconomic shifts, and political violence including terrorism. Because organizations cannot prevent such events from occurring, the risk management emphasis is on identifying them, and figuring out through scenario planning and stress testing how best to mitigate their impact in the event they occur.

first things first

The first step in managing external risks is to understand the sources of external forces that could influence the viability of an organization's business strategy. Figure 1 illustrates six major sources of externals risks: Political, Economic, Social, Technology, Environment, and Legal. Organizations can begin the risk identification process through considering this classification in one-on-one interviews, surveys or working groups. Cross-functional working groups improve understanding of risks as they facilitate open and explicit discussions. In addition, benchmarking with peer institutions or competitors could provide valuable information on external risks commonly reported in the same industry or sector. It is critical that the Board of Directors approves and regularly reviews the list of external risks to ensure that the consideration of those risks is aligned with the organization's strategic objectives.

Figure 1: classification of external risks



Sources: World Economic Forum 1029 Global Risks Report; Ernst and Young

external risk assessment

Once identified, external risks should be prioritized by performing a risk assessment to help management focus on key risks. Most organizations begin the assessment of external risks with qualitative scenario planning and develop stress-testing capabilities over time for risk scenarios that can be reasonably quantified, if needed in their decision-making process. Indeed, extreme scenarios such as global health pandemics or political changes lend themselves to qualitative assessment and do not necessarily require quantitative models.

It is more common to conduct scenario planning in risk simulation workshops as they improve consideration of risk interactions. Each risk scenario examined by participants should include a definition of the risk events including their drivers, the potential impact of the risk events, and the time to realization of the impact on the organization. Stress-testing helps organizations assess risk scenarios that are worth modeling quantitatively using established probabilistic models. Instead the focus should be on the major changes of one or two specific variables with near-term impact. Financial institutions use stress tests to assess how an event such as the default of a sovereign country would affect their loan portfolios or trading positions.

Once the external risks scenarios have been developed and their impact documented, Enterprise Risk Management (ERM) committees have the responsibilities for reviewing and incorporate them into their business strategy, as frequently as needed. The board can inform management and the ERM personnel about significant trends, outside the organization's day-to-day operations and industry, that should be considered in the risk scenarios.

mitigation of external risks

The goal of the risk assessment process is not to produce exact predictions. Rather the process is meant to highlight the key exposures to external risks, so that organizations can develop early warning indicators and response plans to mitigate their impact. It is important to create, evaluate and prioritize options for addressing the risk scenarios based on the capabilities of an organization to withstand a risk event in terms of preparedness, agility, and adaptability. While a contingency plan is critical to managing preventable risks, this might be insufficient for external risks events that can manifest suddenly. Companies can be lulled by the illusion of having robust controls and appropriate key risk indicators (KRIs) to monitor exposure thresholds for external risks.

Risk transfer mechanisms from specialized insurers can be used to mitigate the impact of risk events generally excluded from standard hazard insurance policies. This includes catastrophe, cyber risk and political violence insurance. Likewise, financial derivatives contracts are extremely useful to transfer severe impact of an economic variable such as fuel prices to a counterparty. Another possibility is for organizations to exercise real options, decisions made concerning investment opportunities on physical assets. An example of a real option would be the redeployment of a facility currently located in an earthquake-prone area.

putting external risk management into practice

The success of an effective and sustainable external risk management program depends upon executives' commitment in their risk-management function. While a corporate-level ERM function is important, senior management and the board of directors need be supported by a separate risk-management function to handle external risks, which reports directly to them. This risk function must be performed by people with the right skills supported by technology that is correctly sized for the company.

A large number of Governance, Risk, Compliance (GRC) software vendors provide solutions to build a strong monitoring system for tracking external risks, including real-time dashboards that could be updated automatically with the latest information from commercially or public feeds. In addition to active risk monitoring features, GRC technologies provide scenario management and Monte Carlo Simulation capabilities to assess the impact for selected risks.

Even with heavy investment in technology and training, organizations need to develop risk awareness and mindfulness to cope with external environmental changes in a timely manner, a capability that is seen in High Reliability Organizations (HROs) such as aircraft carriers and nuclear power plants. HROs incorporate external risks into a culture and workforce that respond to threats dynamically. It is only by developing a culture of adaptive capability that organizations could maintain success and performance in an environment where they are continuously impacted by external forces.

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complex data risks with the adoption of AI

by **Boyke** Baboelal

At the same time as regulators are focusing attention on data quality and data risk management processes, the complexity involved in managing data risks has become greater than ever.

The growth in data volumes needed for regulations and capital rules such as MiFID and FRTB, as well as the additional complexity in processing that data, such as mapping transaction data to risk factors and proxying non-modelable risk factors, has resulted in increased organizational exposure to incomplete, inconsistent or inaccurate data. However, these data risks are small when compared to the data risks coming from the adoption of AI. New risks such as the use of biased data, poisoned data (malicious data injected in the model), and dirty data can have severe legal and reputational ramifications.

A very illustrative example of the use of dirty data, although from outside Financial Services, is the use of Predictive Policing Systems that forecast criminal activity and allocate resources accordingly. A report from the AI Now Institute shows that in numerous cases these models are built using data from periods with flawed, racially biased, and sometimes unlawful practices. If AI learns from dirty data, predictions are going to display the same behavior.

A recent example from our industry is gender bias in the Apple Card algorithm. A male user was given a credit limit twenty times higher than his wife despite her higher credit score. The husband's tweet went viral and resulted in a pending investigation over claims of discrimination.

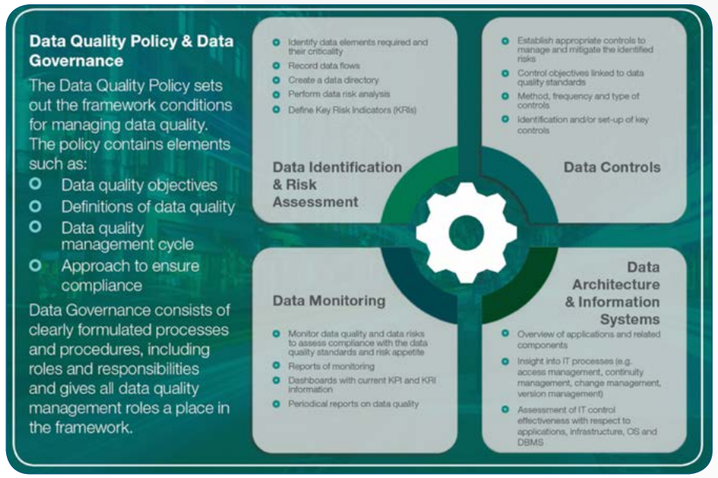
One can assume that removal of gender in training of the algorithm will resolve gender bias. However, it is rarely that simple. Feature engineering is often performed to improve the predictive power of models. Even though gender is removed, other features and/or combinations thereof often can predict gender and therefore result in models still containing gender biases. As these types of data risks are relatively new, many data scientists are not yet aware. A complicating factor is that data science is a vastly growing field and most practitioners do not yet have sufficient experience to deal with these 'nuances'.

If social media, and unstructured data in general, is used to train ML algorithms, data risks multiply again. From social media insights relating to gender, religion, political inclination, sexual identity can be easily derived and used as features in models without the data scientist's knowledge, especially if deep neural networks are used. For example, from an image it is easy to derive the ethnicity of an individual, and if these images are positive for one group, and negative for another, issues may arise. But other risks such as cyber attacks, data poisoning and fake news become relevant as well.

How should organizations manage these data risks?

Although data volumes are larger, with more relationships, and less structure, the same principles apply when managing these new data risks. Organizations need to put in place data quality frameworks (See Figure 1. Data Quality Framework).

Figure 1: Data Quality Framework



Organizations must outline a data quality policy that establishes clear data objectives, for example, data needs to be ethical. The policy needs to define data quality and target levels, and put in place data governance, including processes and procedures, responsibilities and data ownership. The next step is identifying the critical data elements, the risks (errors, gaps, bias) in that data, the flows needed to process and distribute that data, the risks in the data flows, and the controls that are needed to mitigate risks identified.

The important thing is that organizations should be aware of the different data risks that can impact model outcomes. Once risks are identified, the organization can put in place controls to mitigate. For these new types of data risks, the process is not different, only the controls may be a bit more advanced, e.g. the controls may require the use of AI and even Machine Learning (ML). Sometimes the models that the data feeds into are used to test for fairness and/or attacks, thereby blurring the line between data risks and model risks.

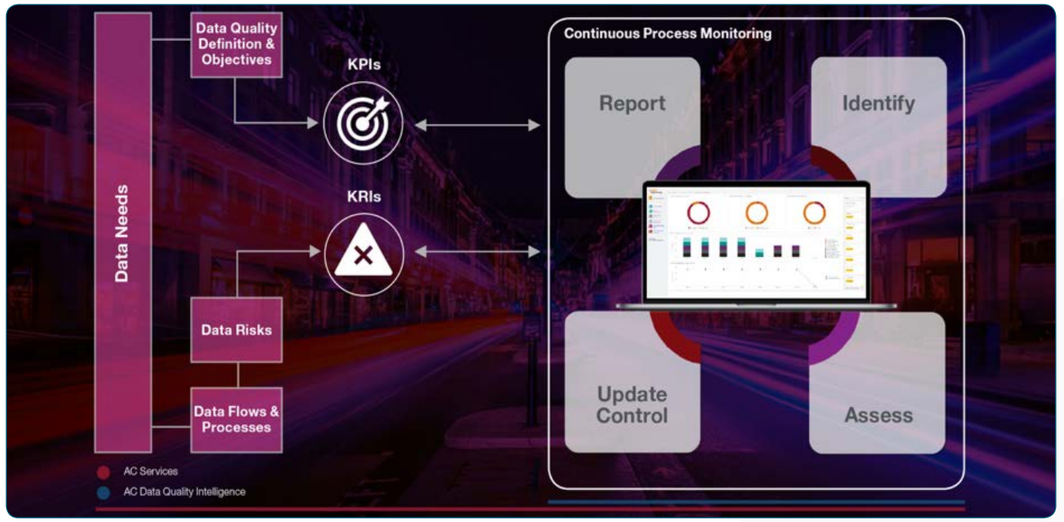
To illustrate how ML can be used for controls, there are many standard open-source libraries such as AI Fairness 360 and FairML that can be used to test for fairness in datasets and models, and to mitigate bias in those datasets and models.

For cyber attacks, such as data poisoning and evasion attacks, anomaly detection, the use of multiple data sets based on time windows, and the impact of newly added data may be used to identify issues, although these approaches are not 100% accurate as it may be very difficult to distinguish malicious from normal data.

As mitigating data risks and producing high quality data becomes more difficult, this is the time for organizations to put a data quality framework in place. To gain competitive advantage, improve efficiency and reduce overall cost, organizations can adopt a Data Quality Intelligence approach that provides further insights in data quality, processes, and operations, allowing the organization to move to a continuous improvement model (See Figure 2. Data Quality Discovery Process).

As easily 80% of effort for model development goes into data preparation and management, the impact of process improvements is significant, not only on cost, but also on turnaround times. Without a data quality framework and Data Quality Intelligence, organizations will have difficulty keeping up with the speed of innovation and will lose competitive advantages along the way.

Figure 2: Data Quality Discovery Process



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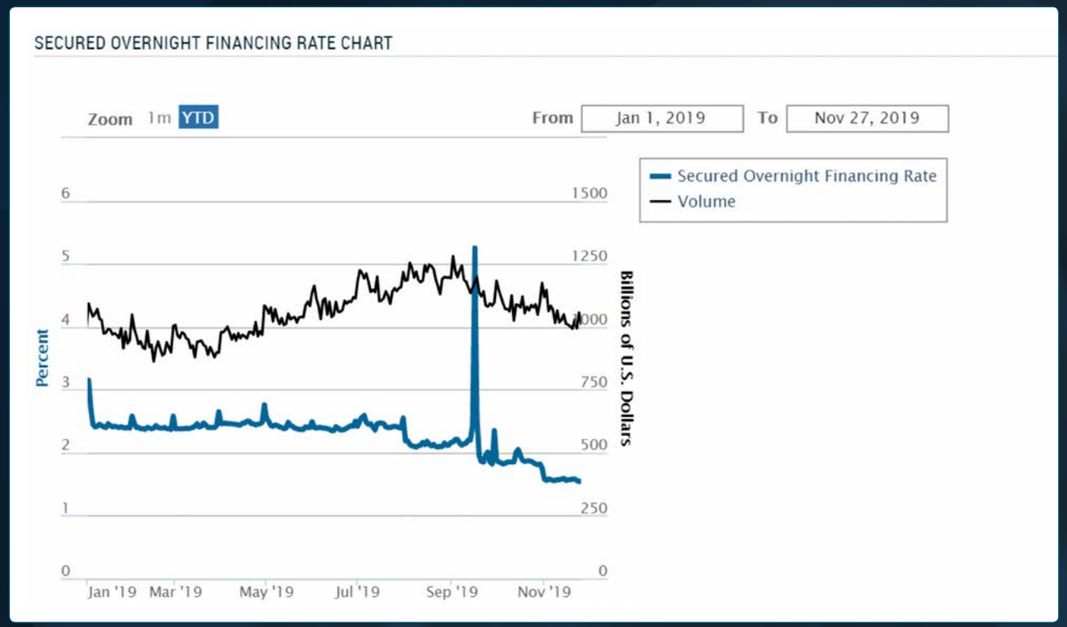
what challenges exist with the transition from IBORs to RFRs?

by **Mohamed** Ismail

As we embark on a new decade, the challenge of replacing all 'Inter-bank offer rates' (IBORs) with 'Risk-free rates' (RFRs) remain a top priority for thousands of banks, insurers, corporates, and asset managers worldwide. By now, many financial organizations have acknowledged the industry-wide deadline of December 31, 2021 and have started building strategic groups, teams, and secured funding to address this complex initiative. An estimated $350 MM (USD) gross notional contracts, largely made up of OTC and exchange-traded derivatives make up a bulk of the traded products referencing IBORs, followed by debt, structured, and cash products. The aim is to produce a new benchmark rate free of market subjectivity and manipulation, promoting fair transaction-based valuations that represent the activity in the financial markets. While organizations such as the CME have cleared millions of futures contracts referencing RFRs (i.e. – the 'Secured Overnight Financing Rate' SOFR), the industry is still struggling, sparking industry-wide debate and strategic alliances to avoid a potential systemic catastrophe.

Below is a chart from the Federal Reserve Bank of New York (FRBNY) detailing the volume and percentage of SOFR activity from January 1 to November 27, 2019.



The challenges below indicate the key areas your organizations should examine going forward:

The impact of stress testing and capital planning, and incorporation of the same into risk appetite assessment, is the critical part. The following approach can be used to stress test the intermediate output of an assessment exercise before finalization:

- **Pricing and Valuation changes:** Middle office business functions are faced with reconstructing yield curves to account for secured risk-free rate discount curves. Taking a closer look at LIBOR, its forward-looking term rate stems from a range of periods (i.e. 1, 3, 6, 9 months etc.) which differ from RFRs as they are daily backward-looking secured (i.e. SOFR in the U.S.) or unsecured (i.e. SONIA in the U.K.) overnight rates. This notable difference further perpetuates the pricing and valuation risk looming over many organizations which could result in generating incorrect and inconsistent pricing and reporting figures. From an ALM perspective, organizations must be made aware of the potential asset-liability mismatch risk between borrowing and lending activities as bank funding would no longer include much unsecured interbank lending (see chart below). This potential mismatch must be examined well in advance, complying with all GAAP-based accounting standards. Financial institutions must examine solutions to manage and comply with the portfolio and interest rate risk that stem from the underlying transaction-based rate composition and its level of volatility and unpredictability.

Cross Geographical RFRs Summary

Alternative Reference Rates	SOFR (Secured Overnight Financing Rate)	SONIA (Sterling Overnight Index Average)	SARON (Swiss Average Overnight Rate)	€STER (Euro Short-Term Rate)	TONA (Tokyo Overnight Average Rate)
Type of Rate	Secured	Unsecured	Secured	Unsecured	Unsecured
Governing Body	Federal Reserve Bank of New York	Bank of England	SIX Swiss Exchange	European Central Bank	Bank of Japan
Term Structure *(Overnight)*	Yes	Yes	Yes	Yes	Yes
Term Structure (*Forward-Looking Term*)	No (Target Date: 2020)	No (Target Date: 2020)	No (Date: TBD)	No (Date: TBD)	No (Date: TBD)
State of RFR in the financial markets	Building momentum	Moderately Liquid	Low liquidity	N/A	Low liquidity
Rate composition	Transaction-based (multiple repo market segments)	Transaction-based	Transaction-based	Wholesale Euro Borrowing Costs	Volume weighted average of transactions (uncollateralized overnight call rate market)

- **People, Processes (Operations) and Technology changes**: All business functions (front, middle, and back office) are impacted and need to be made aware of the challenges. Business and Front-office functions need to initiate client outreach and educational awareness to make clients aware of this industry-wide change, which will require an extensive amount of coordination and strategic communication tactics. For example, (OTC) based contracts may be subject to re-negotiations with their respective counterparties whereas most cash-based products may simply be subject to legal and documentation (i.e. change in terms and agreements within a credit card statement etc.). From a

middle-office perspective, all model governance and validation groups should be consulted, informed, and accountable across all business groups and traded products. Recalibration of existing models and systems to accommodate for the changing tenors and RFRs will need to plan and be managed in accordance to the PMO and program delivery governance. All back-office functions will need to be enhanced, going through rounds of regression testing cycles to ensure all mission critical systems (i.e. BAU functions such as accounting GL systems etc.) account for the new RFRs (i.e. SOFR, SONIA etc.).

- **Legal and Compliance changes**: IBOR-based contracts are deeply rooted across many product types, including contracts stemming well beyond the industry-wide deadline of December 31, 2021. The ARRC (in the U.S.) has made great strides to provide fallback language for derivatives, cash, and structured-based products to accommodate the influx of changes. The scope of these changes help mitigate the reputational, legal, and regulatory risk organizations may face; however, the challenge stems from the volume of contracts that are needed for review and updating. For example, the ARRC has published two approaches to addressing the contractual fallback language necessary for syndicated loans (ARRC, 2019). Large organizations may look to various technologies to assist in this rigorous review process such as implementing techniques like Natural Process Language. The challenge with this approach is not all contracts are structured the same way.

- **Tax and Accounting changes**: Industry experts see hedge accounting for derivative traded products to be one of the key challenges with this transition initiative. The issue stems from the cash flow hedges pre- and post- December 31, 2021 and timing of the cash flow and hedge itself. This may cause wide scrutiny and contradictions with the US GAAP and IFRS financial reporting standards. as many ARRs do not qualify for an eligible hedge accounting benchmark rate. Organizations must be aware and provide solutions from both an accounting, tax, operations, and technology perspective to address the material change and impact of a trade based on transitioning away from IBOR based rates. For example, since SOFR is published daily and is subject to volatility, the potential for a material pricing and valuation change may trigger a materiality change to the traded product itself. This potential hedging risk, in turn, will result in necessary accounting adjustments to be made and will need to be closely examined with legal and accounting first before solutions are implemented.

As of Q1 2020, many financial service organizations have allocated millions of dollars to fund this complex change; however, the overall challenges remain prevalent and need to be addressed in order to meet this industry-wide deadline to avoid a potential systemic risk. The Financial Stability Board and each nations administrator (i.e. BoE, Federal Reserve Bank of New York, Bank of Canada etc.) must work together to shift the industry from IBORs to RFRs by generating awareness, market liquidity, and volume well in advance of December 31, 2021 and beyond.

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2019 Canadian Risk Forum a resounding success

PRMIA's 7th annual Canadian Risk Forum held in Montreal on November 12-13, 2019, delivered beyond expectations. With more than 200 delegates battling a winter storm, reflection and feedback proved the experience worth more than a whipping wind or heavy snowfall. This year's theme, Risk Management: Trending Practices Versus Practical Trends, resonated with our collective audience of thought leaders and practitioners. Each attendee joined in discussions ranging from Regtech in Risk Management, to Insights into Risk and Governance of AI, to a Fireside Chat on Geopolitical Risk Impact on Financial Companies. Our featured reception speaker, Joze Piranian, shared his tale of overcoming adversity to motivate each person in the room to face their fears and overcome their obstacles to enable them to fulfill their potential. The wealth of shared knowledge and applicable information to daily challenges faced by those in the financial risk arena will surely increase beneficial outcomes to all who participated in PRMIA's annual conference.

PRMIA is grateful for the sponsorship from our Platinum sponsor - KPMG; our CRO sponsor - EY; our Gold sponsors - IBM, SAS, and Wolters Kluwer; as well as our Silver sponsors - AxiomSL and CDPQ. This event would not have been possible without the leadership of Kabil Jaa and the Montreal PRMIA steering committee. Without the continued support of the Montreal Steering Committee, our sponsors, and other volunteers, we would not accomplish the milestones achieved for this Forum. Happy New Year, and we look forward to seeing each of you in Toronto for the 2020 Canadian Risk Forum.

climate change resolutions in the banking world

If we don't have a planet, we're not going to have a very good financial system."

James Gorman, CEO Morgan Stanley

introduction

2019 was the year in which Climate Change moved from being a topic of fringe interest to one at the heart of many public policy discussions. Within financial services, this now includes increasing use of environmental disclosures in investment and lending decisions, with many firms steering away from 'brown' assets in favour of 'green' ones. A central bank alliance, the Network for Greening the Financial System (NGFS) was launched, to coordinate global regulatory action. 2020 will see many banks start to assess the impact of climate change on their own businesses, for example via stress tests and capital assessments.

Given the emerging interest in this topic, the PRMIA Institute commissioned a paper to provide risk practitioners with key insights into how the risks to Financial Institutions can be assessed. Our paper is the result of numerous conversations with practitioners, regulators and experts, as well as research from the existing library of resources including the IPCC and UN. There are many challenges that need to be overcome, but we are glad to be on the road towards a more efficient capital allocation process that will enable a healthy energy transition over the next few decades.

physical risk

If carbon emissions continue to grow at their current pace – a baseline scenario – then we can expect a global increase in temperature by 1°C in the next 20 years, rising to (at least) +4°C by the end of the century. This will likely increase drought and bushfire in places such as the southwestern United States, Australia, and southern Europe. Meanwhile, sea levels are currently rising at 3.3mm per year – that's one inch every eight years – meaning that the 'wetter' parts of the world, such as Northern Europe and the northeastern United States, will likely experience substantially more flooding. Long-term investments in property and agriculture need to take account of these risks.

The most employed methodology for addressing climate risk within a portfolio of assets is scenario analysis, where sector specific knowledge is required. In one case study, we illustrate the stress scenario of one agricultural portfolio of assets which includes mixed farming, grains, cotton, horticulture, dairy, beef farming and other assets. The key is to have a meaningful way of translating climate scenarios into credit ratings for the individual assets and entire portfolio. Based on UN climate scenarios, one can model the impact on borrower revenue and thus debt servicing ability, from which different long-term rating downgrades become inevitable. It's very important to note that the local geographies are very important and distributions are very uneven, making local application of these approaches vital.

transition risk

Many governments have committed to combat climate change, with the goal of halving carbon emissions by 2030 and being carbon neutral by 2050. This will entail policy shifts from carbon-based power generation (e.g. coal-fired power stations and petrol-fuelled cars) to renewables, for example wind and solar power generation, plus electric cars. Many governments have already taken public health-based measures to reduce and ultimately eliminate noxious fumes over the next twenty years.

Given the inevitable decline of certain 'dirty' industry sectors, climate is a highly relevant input into the valuation of long-dated assets. A number of central bankers have spoken of their fears of a 'Minsky moment', when market participants acknowledge the material risk climate poses to impacted assets, and re-price accordingly. The speed and severity of such a market correction depends upon the chosen climate scenario and the associated degree of public policy intervention, with market disruption maximized in the (not implausible) event that short-term government policy is ineffective, forcing speedier corrections in the longer term.

Climate change is the result of the greatest market failure that the world has seen."

Knut N. Kjær, Executive Chairman, Sector Asset Management and first manager of the Government Pension Fund of Norway

recommendations

We set out in our paper a number of key recommendations for financial firms that want to be ahead of the curve in managing climate risk:

1. **Get the governance right**. This topic needs airtime at the Board of Directors level for hard decisions to be made. It's also important not to consider climate risk management a PR exercise, but ultimately a credit and investment consideration.

2. **Setting the milestones**. Managing climate risk can seem daunting because of the uncertainty and complexity that surround the topic. Simplifying into long-term objectives with clear milestones will get us where we want to be.

3. **Scenario analysis**. Undeniably difficult to design at scale, it's important to build skills and experience in this area. It's the most viable approach that we have.

4. **Measurement**. What gets measured, gets managed. Perfect metrics are unrealistic, but there are many ways to manage surface data or to go deeper in the supply chain.

5. **Incentives**. Ultimately, these drive behaviour. A fresh look at KPIs will be important to make sure there is proper alignment with the front line.

Managing climate change represents one of the greatest challenges of modern times. The industry needs to evolve, and the risk management profession needs to evolve. PRMIA is fully committed to supporting this evolution and welcomes all contributions to this end.

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Oscar McCarthy is a Director of the PRMIA Institute, and Alex Voicu is a PRMIA Technical Advisor. The PRMIA paper, "The Impact of Climate Risk on Financial Institutions", is available for download. PRMIA Sustaining Members may download it free of charge. Download Now.

evolution of IT risk management

by **Pierre-Yves** Maurois

evolution of IT risk

Financial institutions are expected to embrace technological changes. A lot of attention is directed to evolution in financial services and the competition to existing institutions from financial technology participants. The so-called FinTech companies are presented as competitors to existing actors.

To improve banks' profitability, Andrea Enria, Chair of the Supervisory Board of the ECB, said recently, "Banks need to focus on areas where they can improve, namely increasing cost efficiency, investing in technologies and designing and implementing better strategies[1]." However, the increased exposure of financial services to technology and the deep interconnectivity of systems have attracted attention to risks linked to the use of technology. Within IT Risk, cyber risk is often perceived as a technological risk emanating from external threats. Those external threats are often grouped under cyber security attacks. Many instances have been reported in 2019 alone. From cyber-attacks on ATMs, to data thefts or fraudulent transfer requests, cyber criminals show an impressive inventiveness[2].

Occurrences of events that have been classified as cyber risk over the past few years include both external and internal events. In fact, some of the most important disruptions were not external attacks. Many banks experienced IT issues in the past two years that were visible externally but not initiated by external attacks. In 2018 TSB was hit by a severe incident that originated from a routine maintenance that kept millions of bank customers from accessing their accounts for several weeks. In late October 2019, following investigation into the TSB issue, the United Kingdom Parliament published a statement on IT failures (actually, ICT to include Communication) in the Financial Services Sector[3]. Some of the main points were:

- While considering that completely uninterrupted access to banking services is not achievable and that some IT failures are inevitable, the current level of financial services IT failures was unacceptable, especially when customers are expected to use digital services for day-to-day banking activities.
- Regulators were expected to act through two main directions: 1) Ensuring that the Senior Management Regime would also apply to IT failures, and to 2) Consider extension of the Senior Management Regime to Financial Market Infrastructure firms.

1 / Interview dated November 13th, 2019: https://www.bankingsupervision.europa.eu/press/interviews/date/2019/html/ssm.in191113~1a94fc6dde.en.html

2 / List of cyber incidents: https://www.carnegieendowment.org/specialprojects/protectingfinancialstability/timeline

3 / IT Failures in the Financial Sector: https://www.publications.parliament.uk/pa/cm201919/cmselect/cmtreasy/224/22403.htm

managing IT risk

A quick review of traditional bank responses to risks shows that their options are limited. Accepting risks linked to technology is clearly not acceptable given recent events, nor is trying to avoid the use of technology, as it cannot be avoided anymore. The developing market of cyber insurance does have some potential but, with current data available, insurance contracts are clearly limited in the exposure that can potentially be transferred. So, attention needs to be given to mitigation.

All these considerations are important, but attention is shifting to a more complete view of operational resilience. The 2018 discussion paper issued jointly by the Bank of England, FCA and PRA[4] was aimed to promote dialogue and improve resilience.

The Bank of England has defined Operational Resilience as "the ability of firms and the financial system as a whole to absorb and adapt to shocks, rather than contribute to them[5]."

The discussion paper points to the fact that operational resilience needs to encompass all elements of operations (as does Gartner in its glossary[6]). ICT systems are one obvious element, but so are people involved in the delivery of the process, any supplier involved (e.g. Data and services), premises, responses to abnormal operating conditions, and all dependencies with other processes. Dependencies must be identified to ensure that the full scope is covered. Painful experiences have shown firms and their clients that a missing link in a chain can render a partial recovery useless, if the process cannot be executed.

setting resilience priorities

The increasing complexity of processes and systems often results in too many processes and systems in a firm being classified with the highest priority for recovery. This makes recovery of every element extremely difficult in the appointed timeframe. In a constrained environment, choices must be made to ensure that some business processes are restored fully rather than trying to restore too many and risk having some processes interrupted for lack of one critical link. These choices must be documented to ensure that priorities are clear in case of a crisis. The resilient organisation must be defined to ensure that selected priorities can be executed and that all possible issues are identified.

With responsibilities expected up to Board level, attention to operational resilience is likely to increase for financial firms and market infrastructure.

4 / Discussion Paper: https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/discussion-paper/2018/dp118.zdf?la=en&hash=4238F3B14D839EBE6BEFBD6B5E5634FB95197D8A

5 / Definition: https://www.bankofengland.co.uk/financial-stability/financial-sector-continuity

6 / Gartner glossary: https://www.gartner.com/en/information-technology/glossary/operational-resilience

author

Pierre-Yves Maurois

Pierre-Yves Maurois has a strong risk management background. He has more than 20 years of consulting experience covering banks, asset management and insurance in Europe. He has seen widely different implementation of risk management structure in particular in the light of different crises and regulatory changes. His experience ranges from transactions activities and portfolio management to structural issues on data management, organization, and risk culture.

Pierre-Yves participated in the creation of the PRMIA Paris chapter in 2002 where he is still co-regional director. He is also co-chairing the Global Council of Regional Director and is a former Global Board Member.

PRMIA member profile - Eric Sim

by **Adam** Lindquist

PRMIA Director of Membership

a PRM with over two million followers on social media

Eric Sim, PRM, is a MD level risk professional based in Singapore. But to call him a typical risk leader would be misunderstanding the vision and capability of this PRMIA peer. Eric is a internationally sought-after speaker, a winner of the Linkedin China Spotlight award which lists the top 20 influencers. For perspective: He has over two million followers on social media.

I was fortunate to get to know this amazing man when doing a profile of Professional Risk Manager (PRM™) holders and decided his story was too important not to be shared with the entire PRMIA community.

Adam How long have you been in risk and how did you get interested in it?

Eric I have been in risk for more than 20 years. I came out of school with an engineering undergraduate degree. Math has been my interest, and I am a person who is always trying to learn and grow. I became interested in finance when I learned about the Black Scholes option pricing model and saw parallels to engineering, so I went to graduate school for finance. Engineering and finance were not a common combination in Asia at that time, so it stood out to recruiters, and I quickly obtained a job with a bank as a market risk manager.

Adam Was your job risk management or sales?

Eric Initially it was risk management; later it became a combination of both when I was placed in a client risk advisory function, but my technical background was why I was there. I discovered quickly I liked helping clients solve their problems and seeing if we had a solution that could help them. This was quite a different approach at the time, as I was not pushing specific products and often engineering new ones to fit their hedging needs. It was exciting and caught the attention of leadership, providing me with new overseas opportunities within my existing bank and offers from others. Along the way, I pursued the PRM certification as I felt it gives the best education advancement in the industry. I build trust with clients quickly, as my PRM signals to them I have the skills to help them.

Adam In getting to know you, I have learned that your focus is on helping others. How did your clients-focused approach make you an international speaker?

Eric My father is a street-food vendor selling noodles for 30 years. The only day he takes off is the first day of Chinese New year, otherwise he is up everyday at 5am working hard. I worked for him as a boy, and I learned the skills on how to treat people well, how to listen, as food orders can be very specific. He taught me to be aware, to watch for the little things. I realized that I was given a very special upbringing. I have been so fortunate to experience life - from street food noodle to the pasta served by Michelin-starred chefs, I wanted to share my wide-ranging experience with others.

Adam So you are an International speaker on noodles?

Eric (laughs) Not really, but it is a part of my message. My bank HR was doing a recruitment at a college and I asked if I could speak to the class. They brought me along. I shared the nature of my derivatives structuring job along with some of my life lessons. It resonated with the students! Soon, I was asked by the college professor to create and teach a course, that turned into three courses. That led to becoming an Adjunct Associate Professor of Finance at one of the top universities in Asia. My speaking and writing now is on creating the fundamentals to a happy life, the skills needed for successful navigation of that life and self-fulfillment. Life skills are essential to professional growth, yet schools will admit they focus mostly on technical knowledge, not life skills. I designed training programs to address that in a way that changes case studies into human stories that people can relate to. Many people find my story from a noodle seller to an investment banker a pretty intriguing one.

Adam So what skills should risk managers have to be successful?

Eric Good risk managers must first be competent in technical skills. What we do is unique and definitely requires a high level of professional skills sets. That's why I am such a proponent of the PRMIA PRM.

Next, we need to be able to manage time well. With new products and fast-changing global market environment, we need extreme time management. It is very easy with all the things going on to get distracted. I cut down choices on things to obtain focus. I wear the same colored shirt and suit each day. I have one watch, my Timex watch (not Rolex, as I would worry about it further distracting me), whether for a 10km run or a black-tie event. It is my view that a mind that focuses on three or four things can create the biggest impact on our lives in years to come.

Third, we need to improve our communication. Start with your immediate peers. Think of them as customers, because they are. Peers and bosses are internal customers. Our job is to build trust and rapport with them before thinking of deliverables. After them come the external customers, where our focus is also building trust and rapport before driving revenue. It all depends on communication.

Eric I recommend people do things that allow them to develop their communication skills - write on social media, give speeches, teach others. Do things that can help you connect with others at a deeper level. Listen and learn from others. They have a lot to share.

Adam Do you use these lessons in your writings?

Eric All the time. Each social media platform has its own native language. Linkedin users are quite happy to read long articles while Instagram users focus more on photos and videos. Facebook is more social with short conversations while Pinterest's photos are almost at professional level. So we cannot simply post the exact same text across all social media platforms. Only by speaking the native language specific with each platform, can we connect with our readers.

Adam So how did you get started?

Eric I was weak in many areas when I was young. I know what it is like to be in that position. Five years ago, I decide to share my experience in overcoming challenges and improving myself on Linkedin. Most things I do today I frame within the idea of how my actions today create impact five years from now. My goal is to impact many lives through my teaching and sharing. But to do this you must first start with helping a single individual and then going from there. It is like a stone thrown in a pond, causing a ripple effect that affects the whole pond.

Adam How do people accomplish what you have?

Eric Think Big, Start Small, Act Now!

If you would like to learn more about how the PRM has professionally helped others like Eric, visit the PRM webpage on www.PRMIA.org. To reach out to Eric and learn more about his work, visit his Linkedin page at www.linkedin.com/in/simeric/ or his company, Institute of Life, website: www.IoI.life/events.

author

Adam Lindquist

Adam Lindquist is the Director of Membership for PRMIA. His career background includes vertical integration disruption as a regional manager in banking, business development resulting in a 5-year run as fastest growing specialty retailer, and many entrepreneurial ventures.

PRMIA member

Eric Sim

US stock market: growth potential or risk of falling?

by **Aleksei** Kirilov & **Valeriy** Kirilov

In December 2019, the US stock market raised to absolute highs, after the close of trading on December 27, the S&P500 index amounted to 3,240.02. With minor corrections, this growth has been going on for almost 12 months since the end of December 2018. Today, there is no consensus among investors about the potential for further growth of the US stock market and its individual segments. Indeed, several of the most significant factors can become drivers of both growth and decline: the conclusion of an agreement on trade with China, the state of the economies of Europe and China, the impeachment procedure initiated, and the Fed's policy.

As was shown in[1], American companies and banks are characterized by an extremely high stratification in terms of capitalization. This is further strengthened by the growth of the stock market. Let's try to evaluate the market growth potential based on the expected return on equity investments.

One of the most widely used parameters in stock analysis is the P/E ratio (price/earnings). Robert Shiller in[2] showed that this parameter can be effectively used to analyze the entire market as a whole, for example, to analyze the S&P500 broad market index. For this, the Shiller PE ratio or also named Cyclically Adjusted Price Earnings (CAPE) was proposed. At different stages of the business cycle, the net profit of companies can vary widely. In order to reduce the effect of these fluctuations, the Shiller PE ratio is calculated using the 10-year average of EPS adjusted for inflation using the Consumer Price Index (CPI). According to https://www.multpl.com/shiller-pe on November 22, 2019, the Shiller PE ratio was 30.43. Obviously, the Shiller PE ratio is a very inertial parameter. In this form, it is difficult to use to assess the current state of the market.

For our analysis, we used the P/E value, which uses the EPS values for the last year when calculating earnings. In addition, we calculated P/E for the market as a whole based on P/E data for more than 2,500 US companies. We believe that this approach allows us to more accurately assess the current state of the stock market. The source data was obtained from the service https://finviz.com. To reduce the impact of fluctuations in company profits, dates outside of reporting periods were selected if possible. Table 1 shows a fragment of data on 2662 companies after the close of trading on December 27, 2019.

1 / Aleksei Kirilov, Valeriy Kirilov. High business concentration as a source of strategic risk. Intelligent Risk (PRMIA), July 2019, https://issuu.com/prmia/docs/intelligent_risk_july_2019_issuu

2 / Robert J. Shiller. Irrational Exuberance: Revised and Expanded Third Edition. Princeton University Press; 2016

Table 1.

#	Ticker	Company	Sector	Market Cap, mln USD	P/E	Price
1	UONE	Urban One; Inc.	Services	3.16	0.75	2.00
2	MARPS	Marine Petroleum Trust	Financial	3.56	6.50	1.78
3	SPEX	Spherix Incorporated	Services	3.74	2.81	1.35
4	SNMP	Sanchez Midstream Partners LP	Basic Materials	5.25	0.06	0.25
5	BDR	Blonder Tongue Laboratories; Inc.	Technology	6.92	3.38	0.73
...						
2,658	GOOG	Alphabet Inc.	Technology	920,522.19	29.01	1 351.89
2,659	AMZN	Amazon.com; Inc.	Services	930,038.54	83.90	1 869.80
2,660	GOOGL	Alphabet Inc.	Technology	937,749.55	29.47	1 354.64
2,661	MSFT	Microsoft Corporation	Technology	1,199,577.38	31.82	158.96
2,662	AAPL	Apple Inc.	Consumer Goods	1,290,331.55	24.45	289.80

Source: https://finviz.com

Based on these market data, two variants of P/E averages were calculated. Simple average and weighted average taking into account the capitalization of companies. Simple average PE for 2662 companies was 58.04. The weighted average PE value was 43.91. For further calculations, the weighted average value P/E was used.

As known, the reciprocal of $(P/E)^{-1}$ = E/P is the return on the asset for the corresponding period. And E/P minus the risk-free rate is a risk premium. That is, investors expect to get a profit not lower than this value. The risk-free rate was FOMC[3]'s target federal funds rate. The FOMC's target federal funds rate, established on October 31, 2019, is equal to 1.75%. In our case $(P/E)^{-1}$ minus FOMC's target federal funds rate is equal to 0.53%. Thus, the expected return on investment in the stock market is on average 0.53%. This apparently indicates that the current market growth potential is close to exhaustion.

Note that the Fed has reduced the rate three times since August. Before the start of the reduction cycle, the rate was 2.50%. Thus, if the rate was not reduced, the attractiveness of investment in stocks would be close to zero.

Similar calculations were made for market data for June 14, September 27, October 24 and November 22, 2019. The results are shown in Table 2.

3 / The Federal Open Market Committee (FOMC), https://www.federalreserve.gov/monetarypolicy/fomc.htm

Table 2

Date	FOMC's target rate	Weighted average P/E	$(P/E)^{-1}$	$(P/E)^{-1}$ - FOMC's target rate
06/14/2019	2.50%	46.50	2.15%	-0.35%
09/27/2019	2.00%	59.84	1.67%	-0.33%
10/24/2019	2.00%	53.46	1.87%	-0.13%
11/22/2019	1.75%	43.52	2.30%	0,55%
12/27/2019	1.75%	43.91	2.28%	0.53%

Prior to the latest Fed rate cut on October 31, the expected return on equity investments could be less than zero. Thus, the Fed's reduction of the rate was an absolutely necessary step. Otherwise, the market expected a correction comparable in scale to December 2018 or perhaps even stronger. Given the amount of funds invested by US households in the stock market, the Fed will find it difficult to allow such a scenario.

It is interesting to analyze the value of (P/E)-1 minus the FOMC's target rate for various market sectors. The calculation results for November 22, 2019 are shown in Table 3.

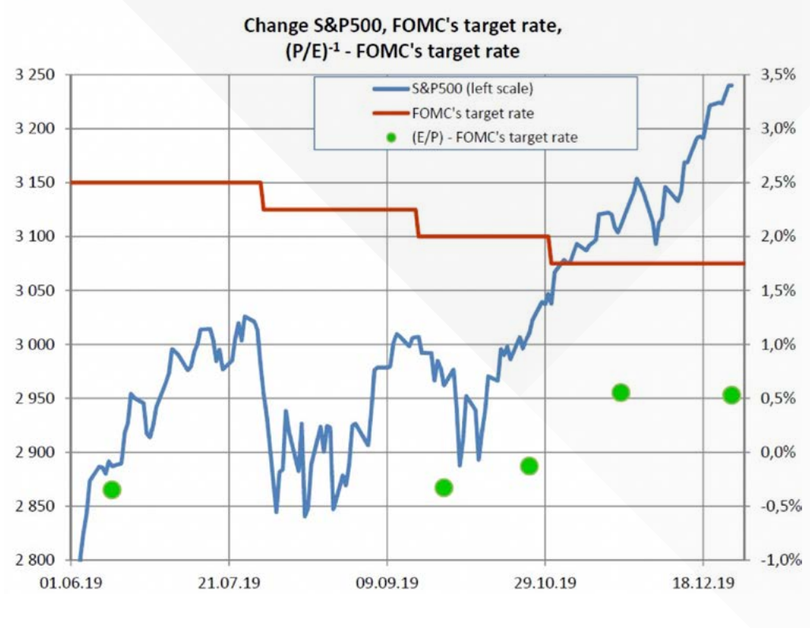
Table 3

Sector	P/E	$(P/E)^{-1}$	$(P/E)^{-1}$ - FOMC's target rate
Conglomerates	109.13	0.92%	-0.83%
Industrial Goods	91.56	1.09%	-0.66%
Technology	57.63	1.74%	-0.01%
Services	45.50	2.20%	0.45%
Market (2677 companies)	43.52	2.30%	0.55%
Healthcare	38.61	2.59%	0.84%
Utilities	30.46	3.28%	1.53%
Consumer Goods	29.47	3.39%	1.64%
Financial	28.14	3.55%	1.80%
Basic Materials	25.03	4.00%	2.25%

As can be seen from the data presented, investments in three sectors are currently the least attractive: Conglomerates, Industrial Goods and Technology. And the investments in the sectors Basic Materials, Financial, Consumer Goods are most attractive. One can interpret these results differently. In the case of a serious correction, the shares of the most overvalued sectors will fall most of all. That is, these shares will be promising for a short sale or for the purchase of put options. Shares of Basic Materials, Financial, Consumer Goods sectors may decline to a lesser extent. In these sectors, investors will be able to pick up defensive stocks.

Figure 1 shows the change in the S&P500 index from June 1, 2019, the change in the FOMC's target rate, and also the change in the value (P/E)-1 minus FOMC's target rate.

Figure 1.



In addition to lowering rates on stock market growth, an increase in liquidity also affected. Since the end of August 2019, the Fed has again begun to increase liquidity to normalize rates on the interbank market. From August 28 to December 26, 2019, the Fed's balance sheet increased by more than $405 billion, see https://www.federalreserve.gov/releases/h41/.

In our opinion, the market growth over the past four months is largely due to the Fed rate cut. This made it possible to derive the expected return on investment in stocks from the negative zone. However, the Fed has little potential for further rate cuts. In addition, the dynamics of the global economy and a comprehensive trade agreement with China remain open to question, which also limits the Fed's ability to cut rates. The market's growth potential may be affected by the January reporting of companies for the fourth quarter and the year as a whole.

According to our estimates, if the reporting of companies for the fourth quarter is worse than the average annual values and the Fed rate is not reduced, then by March - April 2020 the potential for further stock market growth may be exhausted. Since even despite a further increase in the Fed's balance sheet, the return on investment in stocks may become negative. In the face of negative investment returns, further growth in stock quotes could lead to an inflating bubble and creating a dangerous situation like the Dot-com bubble in 2000 or the subprime mortgage crisis in 2007.

authors

Aleksei Kirilov

Partner at Conflate LLC

Conflate is a Russian management consulting company specialized in strategy, risk management, asset management and venture investment. As the partner of Conflate, Aleksei is responsible for asset management and venture investment. He specializes in the US stock and debt markets. Aleksei has more than 15 years of experience in financial services including development of financial strategy and financial KPI, liquidity management; controlling system, allocation of expense on business unit, financial modeling and debt finance. He has cross industries experience: banks, oil & gas manufacturing, real estate.

Aleksei has an MBA from Duke University (Fuqua School of Business), a financial degree from Russian Plekhanov Economic Academy and an engineering degree from Moscow Engineering Physics Institute.

Valeriy Kirilov

General Manager at Conflate LLC

Valeriy has 15+ years' experience in risk management and management consulting (BDO, Technoserv, then at Conflate). Besides he previously worked in the nuclear power industry (safety of Nuclear Power Plants).

Valeriy has an MBA from London Metropolitan University as well as a financial degree from Moscow International Higher Business School MIRBIS and an engineering degree from Moscow Engineering Physics Institute. He holds the PRM and FRM certifications and the certificate of Federal Commission for Securities Market of series 1.0. Valeriy was a member of the Supervisory board of the Russian Risk Management Society in 2009 – 2010.

PRMIA London spotlight

London is home to many world class financial institutions, as well as one of the highest-performing chapters of PRMIA. Enjoying an enthusiastic and diverse membership, the London chapter drives the PRMIA agenda with conviction, thereby contributing to progress towards PRMIA's vision of a world in which risk management is a recognized profession and an embedded core competency of the financial services industry.

The London chapter is very active in promoting the risk management profession by organizing topical industry events where risk management professionals can freely discuss industry and organizational issues, exchange their views on important trends, and build strong professional networks. The London Chapter organizes itself around specific results areas, which are Events, Professional Community Outreach, University Outreach, CRO Outreach and Risk Leader Summit.

high performing volunteer organization

The London chapter is a great example of how a volunteer-run organization can deliver great results. It is all about commitment, mutual support, transparency, and accountability. Expectations of steering committee members are clearly articulated and have been agreed by every member of the committee. Candidates wishing to join the steering committee must also subscribe to these minimum requirements before joining the committee.

At the beginning of the year, the steering committee agrees on key results areas based on the focus for the year. Each committee member is assigned to one or more of results areas, the members of which present their objectives for the year to the committee. Once agreed, these objectives are used to monitor progress of each results area.

It is recognized that work commitments sometimes take over, so members' performance is reviewed at the end of the year based on 12 months, taking into account minimum requirements and contribution to the objectives of the results area(s). This means that it is acceptable for members to contribute less at some points in the year providing that overall performance meets minimum expectations. The contribution of every member is visible and is used in the chapter performance review at the end of the year. This approach seems to work well judging by the overall performance of the London Chapter.

Events organized by the London chapter in 2019 (sponsors featured after event name)

- Speaker Dinner (Bloomberg)
- Brexit (Reed Smith)
- Cryptocurrency - Risk Leaders Group (Investec)
- IFRS9 (Deloitte)
- Enterprise Stress Testing (Bloomberg)
- IBOR Replacement – Risk Leaders Group (CRISL)
- Operational & Cyber Resilience (ORIC & Broadgate Search)
- IBOR Replacement (FINCAD)
- Climate Change (IFoA)
- PRM event (EBRD)
- "The Diversity Imperative" - Risk Leaders Group (HSBC)
- London Risk Leader Summit

EMEA Risk Leader Summit

The London PRMIA Chapter, together with PRMIA Global, has been organizing the EMEA Risk Leader Summit (RLS) for four years running. 2019 saw a significant increase in the number of high caliber participants and secured the largest attendance to date. Building on the success of the 2019 event, it has been agreed that next year the RLS should only be open to PRMIA Sustaining Members. The 2019 RLS focused on leadership, new technologies, and the recalibration of the value chain. Over 95% of attendees were practitioners, with most holding Chief Risk Officers or Heads of Risk positions. Two keynote speakers and ten panels covered a range of topics, with time for audience participation and networking built into the agenda.

PRMIA Risk Management Challenge

The London chapter has been a long-standing supporter of the PRMIA Risk Management Challenge and organizes a local event for graduate and undergraduate students from all over Europe to compete to solve business cases with a risk management focus. The London chapter has traditionally hosted the PRMIA regional finals and has been working hard to increase the number of participating universities and teams in future PRMIA Risk Management Challenge competitions.

Regional Directors

- Kathryn Kerle, Chair, Greater London Mutual
- Oleg Lebedev, Managing Director, Ten Diffusions Limited

Steering Committee

- Andy Stalmanis, Treasurer, Interim Treasurer, Pepper Money UK

Steering Committee (continued)

- Rustum Barucha, Director, SEBA International
- Christine Bane, Assistant Director, Moody's Analytics
- Emma Hawkins-Haile, Managing Director, Hawkins Haile
- Lesley Scott, Executive Director, Sumitomo Mitsui Banking Corporation Europe Limited
- Pradip Lamsal, Software Engineer, Development, Architecture and Management, Nomura International
- Saadia Mujeeb, Global Head of Credit Risk, Hedge Funds, Mutual Funds, Prime Brokerage & Central Clearing Houses, NatWest Markets
- Ana Bartolo, Director, Strategic Risk Management, Barclays Bank
- Esperanza Cerdan, UK Chief Risk Officer, DWS Group
- BC Achary, Executive Director & Deputy Chief Executive Officer, FCMB Bank (UK) Limited
- Navin Rauniar, Risk Director – LIBOR Transition, Quantico Associates
- Vijay Krishnaswamy, Chair, Events Committee, Partner, True North Partners

Events Committee

- Arif Mansoor, former Chief Operating Officer, Risk Management, Standard Chartered Bank
- Assylbek Mukhanov, Graduate Analyst – Credit Risk Appetite and Policy, Royal Bank of Scotland
- Christine Bane, Risk Consultant, Enterprise Risk Services EMEA, Moody's
- Clare Acaye, Recruiter, Risk Management, Black Swan Group
- Cornelius Nandyal, Partner, Associates in Capital Markets
- Deepika Puri, Business Manager, HSBC
- Katherine Moore, Operational Risk Consultant, Wells Fargo
- Keith Jones, Senior Recruiter, Paritas Recruitment
- Keith Trevis, Implementation Specialist, Quantifi Solutions
- Kieran Monteil, Senior Risk Consultant Market & Liquidity Risk Oversight, Nationwide Building Society
- Otoru Briggs, Risk Specialist, Operational Risk, Financial Conduct Authority
- Thomas Coward, Head of Credit Risk Reporting, UBS
- Vijay Krishnaswamy, Chair, Partner, True North Partners

2019 EMEA risk leader summit offered insight into key issues facing risk leaders and their organizations

by **Alex** Voicu Technical Advisor, PRMIA

On November 5-6, 2019 we saw more than 130 risk leaders come together at the Bloomberg HQ in London for the 4th edition of the EMEA Risk Leader Summit, where we discussed macro risks, risk strategy, technology, climate risk management, and the transition away from IBOR.

The PRMIA staff would like to thank the co-chairs and the organizing committee for their great contributions, namely Kathryn Kerle (Chair, Greater London Mutual); Cosimo Pacciani (COO, Algebris Investments); Konrad Kompa (IB CRO UK, Credit Suisse); Rustum Barucha (Director, SEBA Search); and Monika Smatralova (Head of Risk Analytics, PTSB).

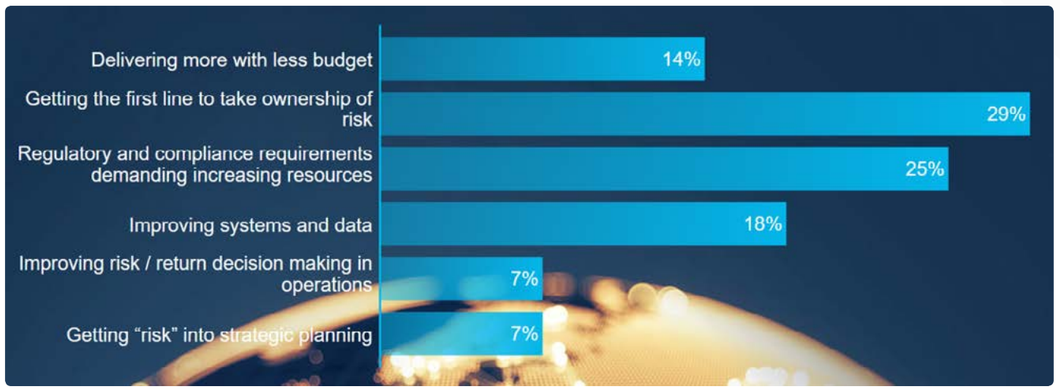
The main focus was on emerging risks, the technological transformation and risk and organizational strategy. To gain insight on the attendees' perspectives, we ran thematic live polling questions for the risk leaders in attendance. Key findings are summarized below.

what poses the biggest risk to European financial institutions?

The focus of risk leaders is on adapting the business model to a new reality where FinTech companies are attacking high margin business. If the return on equity (RoE) for banks was subpar in the last decade, productivity measures are the only save banks can employ. Other risks mentioned were a looming Eurozone recession, the regulatory landscape, negative rate policies which have been in place for almost a decade, and the political realm which has a tendency to swing towards populism in decades following a large crisis coupled with wealth inequality.

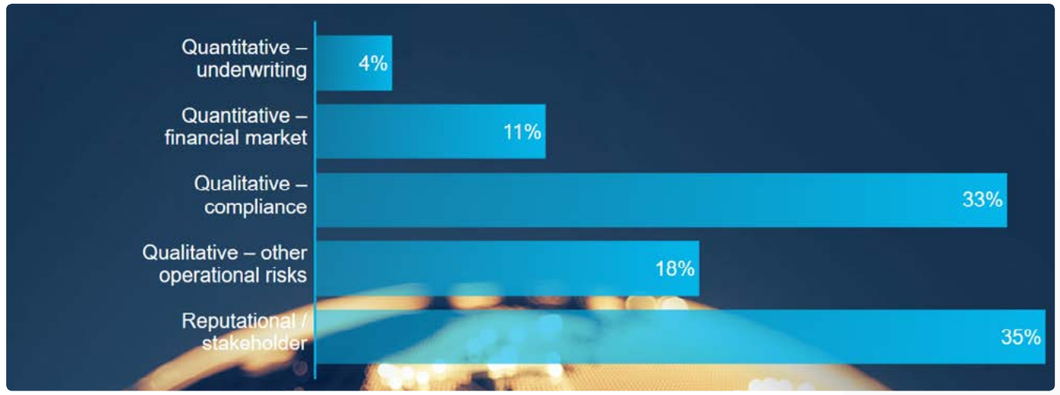
what is the biggest challenge for risk departments today?

We had a healthy discussion around improvements and challenges in the industry, but we wanted to know first-hand what your risk peers thought was the biggest challenge to deliver. Most risk practitioners felt first line ownership of risk is the most difficult part of the job at times. Regulatory and compliance scrutiny was second on the list, systems and data improvements third, and budgetary constraints fourth.

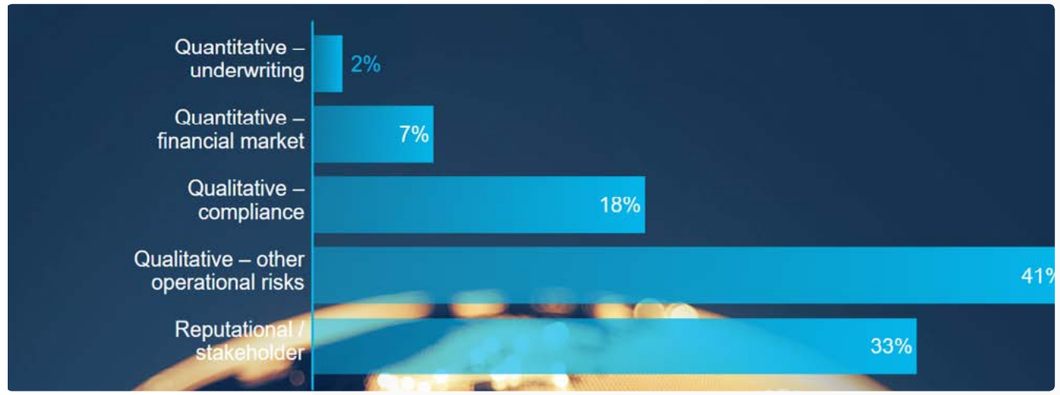


taking stock of the last decade, and predictions for the future

We asked which area of risk has changed the most in the past decade. The two leading answers were Reputational / Stakeholder and Qualitative Compliance. 18% also chose other operational risks that have seen marked improvements.



What does the wisdom of crowds tell us about the future? Practitioners expect better control over qualitative operational risks mostly, and other qualitative areas such as reputational and compliance.

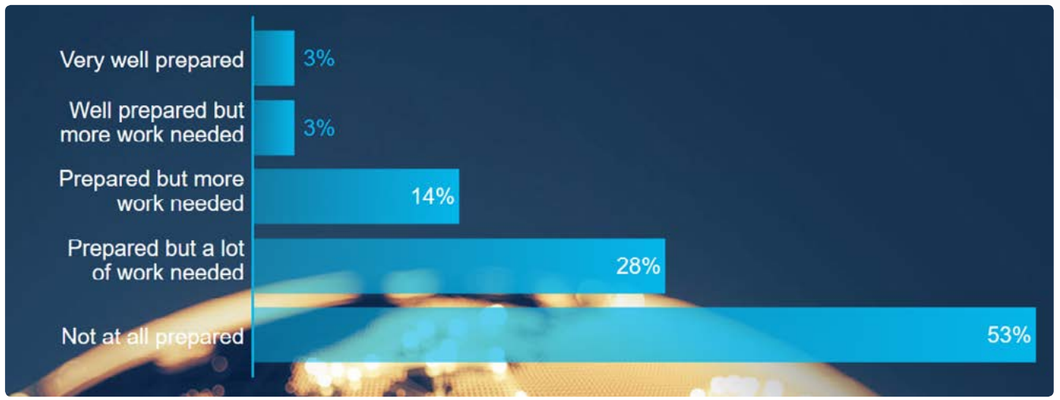


which new technologies are you using for risk management?

It looks like new technologies still have major room for adoption. Only 16% of respondents have onboarded Machine Learning or Natural Language Processing solutions either internally or through a vendor. There are many firms looking to make AI decisions auditable and trackable, which is a major concern for regulated financial institutions.

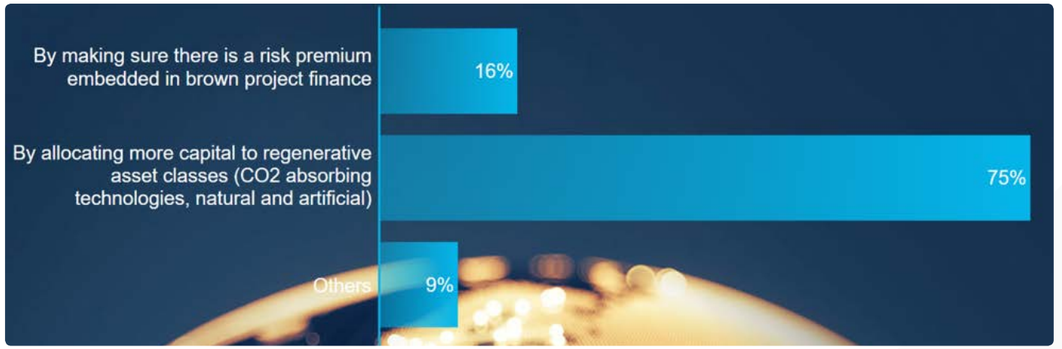
how well prepared are you to handle the financial, disclosure, physical and transition risks of Climate Change?

The regulatory framework around managing climate risk is getting built in the UK, Netherlands, and China, and you can reference the progress in our climate paper. Some of the leading institutions feel well prepared, but they only accounted for 6% of our audience. Watch this space for growth in the risk industry this year, with the first climate stress test performed in the UK next year.



what is the most impactful way that the finance industry can help change the environment?

Risk Leaders weighed in on how the financial industry can help change the environment. A bigger allocation to regenerative asset classes won by a wide margin over a higher cost of capital for brown business.



how prepared are you for the IBOR transition?

The worlds' benchmark rate is phasing off in the next few years. While many people don't perceive an impending doom, many in the room were worried about complex issues and arbitration that may arise for which the current internal and external infrastructure is not prepared. This may be one of the big headaches of 2020.

Thank you for reviewing some of the key topics of the EMEA Risk Leader Summit 2019 with us.

Join us in 2020! If you would like to pre-apply, send a quick note to alexvoicu@prmia.org with your work e-mail, job title and phone number and we'll make sure you are the first one to join the list when it opens. The EMEA Risk Leader Summit is open to active risk practitioners with titles of managing director and higher or functional heads currently engaged with a financial institution who are Sustaining Members of PRMIA.

calendar of events

Please join us for an upcoming training course, regional event, or chapter event, offered in locations around the world or virtually for your convenience.

PRM™ SCHEDULING WINDOW

January 1 – March 13

PRMIA RISK MANAGEMENT CHALLENGE

January 10 – April 2020

MARKET RISK MANAGEMENT UNDER BASEL III/FRTB

January 21 – April 7, Weekly Sessions – Virtual Training

MACHNE LEARNING AND AI FOR FINANCIAL PROFESSIONALS

February 5 - Webinar

FINANCIAL RISK MANAGEMENT IN PRACTICE: MARKET RISK

February 25 - March 16, Weekly Sessions – Virtual Training

VALUE AT RISK METHODS

February 12 – Webinar

7TH XVA, RISK, CLEARING AND COLLATERAL CONGRESS

February 13 – Hanover, Germany

PRM™ TESTING WINDOW

February 17 – March 13

CLIMATE RISK FOR INVESTMENT

February 19 – Vancouver, BC

ARTIFICIAL INTELLIGENCE IN BANKING - RISKS AND REWARDS

February 25 - Vienna, Austria

ADVANCED OPERATIONAL RISK MANAGEMENT

March 3 - April 21, Weekly Sessions - Virtual Training

MODEL RISK MANAGEMENT

March 5 – Vancouver, BC

FOUNDATIONS OF MACHINE LEARNING & ARTIFICIAL INTELLIGENCE FOR FINANCIAL PROFESSIONALS

March 17 - May 5, Weekly Sessions - Virtual Training

ERM 2.0 - STRESS TESTING, CAPITAL PLANNING & SCENARIO ANALYSIS

April 7 - May 5, Weekly Sessions - Virtual Training

INTELLIGENT RISK

knowledge for the PRMIA community

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