



**For the capital markets,
every risk playbook needs to
implement these 6 themes**

The capital markets have not really benefitted from any tailwinds recently: Inflation rose and is not yet close to being stabilized; global interest rates jumped dramatically; there is slower growth, and geopolitical tensions seem to keep getting worse, among other headwinds.

Investors are also assessing whether the U.S. and global economy is likely to plunge into a recession. While the probability and timing of a significant downturn are difficult to estimate, certain markers, such as those mentioned above, in addition to the bank failures that occurred in March 2023, can indicate a buildup of systemic risks. What does this mean? Financial firms ought to have nothing less than the best in risk management.

Unfortunately, that statement has not proven to be the case fully across the capital markets. In one recent example, whatever safeguards were in place didn't prevent Silicon Valley Bank from failing, destroying over \$40 billion in shareholder value, and forcing unprecedented government intervention to protect depositors. The problem there was the lack of investment in proper risk management, lack of proper compliance, and lack of proper supervision.

Today demands a renewed focus on risk mitigation strategies. We believe these are the top 6 risk management themes that firms must focus on to be prepared for the uncertain future that lies ahead.

1

Develop and conduct adequate stress testing methods

It can't be stressed enough the importance of developing a successful stress testing framework and creating and conducting adequate stress testing methods.

Stress testing is an essential tool for viewing the "big picture." While stress testing is nothing new, it is not always properly entrenched into risk management processes. But it can be an essential way to identify vulnerabilities across a business.

Stress testing needs to be viewed as more than a box-ticking exercise. Stress testing can be a valuable tool to assess how a business will fare in the face of change and unexpected market events. Putting together potential scenarios and testing against them can identify emerging risks and improve a firm's resilience in the long term. Effective stress testing should also identify unknown weaknesses and provide an indication of how to strengthen a risk management framework. Stress testing should assess and quantify an institution's vulnerabilities under multiple unfavorable scenarios. Once the potential downside is understood, you can take steps to reduce or mitigate those risks.

Put another way, stress testing should lead to calls for action, which may take many forms, such as developing contingency plans or reducing concentrations, and other tactics. What's more, stress testing offers a forward-looking view of strategic opportunities and promotes risk discussions that lead to enhanced risk communication.

Stress testing is also a Federal Reserve regulatory requirement. As a result, stress testing has become an onerous task, with the Fed estimating it can take 680,000 hours of annual burden to fulfill stress testing reporting requirements. Fortunately, vendor technology is available today that significantly eases and enhances stress testing performance, from providing custom-defined calculations for stress tests, identifying sources of risk within a portfolio, capturing portfolio sensitivities and producing regulatory reports.

Speaking of the Fed, it established its own stress tests, which it started in 2011 following the 2007-2009 financial crisis as a tool to ensure banks could withstand similar shocks in the future. The stress tests requirements vary according to a bank's and financial institution's size. Firms with less than \$250 billion in assets take the tests every other year while firms over that size are required to take them every year. What is notable is that the Fed's stress tests failed to predict the actual stressors Silicon Valley Bank and Signature Bank would face in 2023.

2

Put in place a capable risk data function

Data is the lifeblood of finance.

There is no question that risk management is increasingly dependent on data and the importance of embedded powerful data analytics has only grown over the past few years. Firms find themselves under pressure to deploy updated risk models and to be able to run calculations for analysis more frequently—and on more data—for more accurate and optimized risk management.

At the same time, financial institutions are looking to improve profitability by making better business decisions and making them faster. At the center of this objective is the need for real-time data, which requires a high performance database that delivers millisecond response times and that can store data from multiple data sources.

Data is also needed in greater volumes and at much greater levels of granularity than ever before. In addition to regulatory requirements for better data transparency, the business side demands more information that relies on data.

With markets quickly changing and becoming harder to predict, both firms and their clients need access to timely, accurate data to create scenarios and look at risk in different ways. At the root of this exercise, firms must be able to readily define their data needs and have the ability to manipulate that data as necessary.

However, within the capital markets there are mixed approaches when it comes to data availability and data usage. A fundamental problem is that many databases at financial institutions are still built on legacy systems. This can result in a number of unfavorable factors:

- **Lack of common data models and standards.** Companies have large amounts of different types of data stored in multiple, siloed systems based on entities, lines of businesses, and risk types. Many of these systems are old and antiquated, with no standardized data models or data sets.

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- **Low quality data.** Many firms struggle with the poor quality of data held in their core systems due to input errors, unchecked changes, and the age of the data.
- **Structured and unstructured data.** A significant amount of data within institutions is still unstructured (e.g., information that does not have predefined relationships), such as within portfolios or derivatives, and is not stored in existing centralized databases. Aggregating unstructured data and combining it with structured data is the key challenge.
- **Accurate counterparty data.** A particular problem is getting the deep, accurate, and granular counterparty data essential for credit risk modeling.

Databases built on legacy systems can also fall short when it comes to the streaming of market data and providing answers in real time. In today's financial industry, dealing with data in milliseconds can make or break a trade.

The current environment is a major driver of this focus on real-time data management.

3

Utilize real-time risk analytics

The word “real time” is used frequently in discussions related to risk management, especially as it pertains to analytics. Real-time analytics, in short, turns data into insights immediately after it's collected.

Real-time risk analytics uses data streams to provide a current view of the risk exposure of the organization. Risk managers can easily drill-down and look at the current metrics, trends, and progression on risk-related tasks and activities.

Traders and portfolio managers want to have as much market intelligence as possible when they make a decision. This means that they must have the latest data and reports whenever there is a decision to be made—and real-time risk analytics provide these professionals with real-time data and reporting whenever needed. Instead of relying on intuition and outdated data, managers can make decisions based on analytics and predictions from real-time data streams.

Fortunately, the application of real-time analytics is growing. Companies are investing in analytical capabilities and combining analytics with big data solutions in order to appropriately manage risk as we go through macroeconomic challenges. The ability for all risk analytics to be updated in real-time as the market data feed streams into the system, updating continuously—and immediately—can be a game changer. These lightning-fast analytics can be especially valuable to traders and portfolio managers for pre-trade decision support in fast-moving markets.

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Those organizations that fully embrace real-time analytics across the enterprise stand to gain even more than the ability to tackle the most complex problems and quickly address and respond to evolving global economic trends, they will be positioned to take a true leadership position in today's evolving data-driven financial and investment world.

Fortunately, this level of real-time risk management is now both possible and affordable thanks to technology innovation.

4

Maintain robust counterparty credit risk systems

The possibility that a counterparty may default continues to be one of the biggest risks that financial firms need to manage. We were reminded of this reality in March 2021 by the large losses incurred by a number of major prime brokers during the collapse of Archegos Capital, totaling over \$10 billion in a matter of days. Those players failed to detect any early warning signs and as a result could not act promptly to limit their exposures.

The message is clear. Counterparty credit risk (CCR)—the risk of loss due to a counterparty's default on a contract, particularly a derivatives contract—can result in significant financial losses if mismanaged. However, despite all the emphasis on this statement, there are counterparty risk systems out there in the capital markets that simply aren't robust enough.

That was very much the case with the global financial crisis in 2008. It is one of the most outstanding examples of how not managing counterparty risk can lead to losses. In short, many large financial institutions traded derivatives, such as credit default swaps, with each other. This resulted in the build-up of significant and interlinked counterparty exposures, creating a domino effect of losses when Lehman Brothers went bankrupt.

Regardless of when and how the next market crisis arises, financial firms need to be well prepared and manage their CCR at an acceptable level.

Therefore, if they haven't already, firms need to move to that next level of counterparty risk management, one that is geared to today's environment. How can they get to this position? By taking a number of key steps, including:

- Establish a timely and accurate way to measure CCR.
- Improve the processes by which risk limits are set and adhere to them.
- Define a set of early warning indicators that could help to identify stressed counterparties, underpinned by a clearly defined set of rules for interpreting those indicators.
- Adopt an organization-wide culture that embraces active risk management (something that seems to have been missing from Silicon Valley Bank).
- Leverage real-time data and analysis to acquire actionable insights for better decision making.

5

Make use of emerging technologies to improve the risk function

The landscape of capital markets technology has seen several developments over the past few years. Some of these include the increasing popularity and use of the cloud, wider use of data analytics, and the accelerated use of technologies that provide enhanced efficiency and flexibility. While institutional adoption of innovative, next-generation technologies has been piecemeal and gradual, the industry is certain to see these trends grow, particularly when it comes to improving the risk management function.

Many financial institutions need to embrace emerging technology innovation to increase productivity and efficiency, as well as modernize their trading and risk platforms to help manage risk, enhance profitability and accelerate time to market. Let's explore three technology themes that are becoming major forces within financial institutions.

Cloud Compute

Many view the cloud as one of the most powerful technological innovations of the last 10+ years, enabling firms to harness scalability, flexibility, elasticity, enhanced calculation speeds, and gain the ability to run complex “what-if” analyses across an entire book of trades in near real time, obtain batch-oriented post trade analytics and risk management reports, enable close-to-real time active hedging, and meet regulatory requirements to perform higher levels of stress testing. The use of the cloud can also help institutions gain an advantage over competitors who are saddled with legacy technology.

The question that arises is whether it is better to buy or outsource such a platform with these capabilities or take on the challenges and costs of trying to implement these capabilities into existing legacy infrastructures. It is important to note that as the technologies behind all this become more innovative and more complex, the implementation process just gets heavier and costlier. For those institutions that cannot or wish to not take on that kind of commitment, investment and cost of time related to it, then perhaps a shift to the cloud represents a strategic solution.

On-demand compute services via outsourcing is becoming progressively more prevalent across the financial services industry, and the capital markets see institutions increasingly embracing innovative cloud-based technology for risk management. This results from a clear acknowledgement that the cloud is a catalyst for establishing business and competitive advantages, and one cloud model that a growing number of firms are embracing are the multiple benefits and solutions offered by leveraging Software as a Service (SaaS). By using a SaaS offering, market participants can increase the speed of their innovative cycle and potentially drive down costs and leverage cloud-powered tools to gain an upper hand in boosting returns.

Artificial Intelligence/Machine Learning/Data Science

We've seen a huge explosion of data in recent years and machine learning (ML) has been very able at handling large volumes of data. Data science and ML are becoming an integral part of risk management data processes these days — being primarily used to analyze large data sets and to help market participants make better informed decisions. We are also seeing, more and more, how these technologies are used to automate pre- and post-trade analysis and even trading itself. Advances in computing power are enabling the explosive growth of machine learning applications over the last few years.

Possibly, the most fascinating thing about the evolution of machine learning is the tools that are being brought to the market, and when in combination with the open source software community, this results in an incredible ecosystem coming to fruition. This ecosystem, which includes artificial intelligence (AI) and big data, is available to all different types of market participants who become a member of it and thereby have access to its value-added data. A lot of data venues and analytics venues are coming together to be a part of this ecosystem and institutions can access them in real time.

Additionally, this ecosystem is helping to solve some of the most complex problems the financial services industry faces today. For example, many different applications are being looked at, from the use of computing automation and the use of machine learning for anomaly detection in data and to be able to conduct more sophisticated analyses.

Personalization is another important theme. Traders don't all have the same books. They don't have the same counterparties. They may cover completely different sectors. Traditional technology, however, is just too unwieldy to provide any sophisticated type of personalization. This is where we introduce the aid of AI and ML.

AI/ML can be used to vastly improve the trader user experience by providing better personalization capabilities. AI/ML can tailor and tweak the user experience traders are getting in terms of the information they are receiving on their screens, the sort of dashboards they are seeing, the data they are getting regarding behavioral patterns, the timings of trades, and so on—all with the objective of helping traders make more informed and better decisions.

QuantTech

As markets become faster and more dynamic, risk decision making is moving towards real time. As a result, the demand for real-time decision-support technology and information is greater than ever. How is this being accomplished? What tools are being used? The answers are rooted in the growing popularity and use of quantitative technology, or “QuantTech,” which is comprised of comprehensive development platforms, rich data management capabilities and streaming real-time analytics for creating, testing and deploying innovative solutions.

In the world of quantitative finance, quantitative research and development help drive an institution's strategy to the cutting-edge of “what's next.” What does this mean? As innovation and creativity are the driving forces behind success, QuantTech can be leveraged to increase productivity and efficiency, as well as modernize trading and risk platforms to help manage risk, enhance profitability and accelerate time to market.

By investing in quant development environments and platforms, firms can address numerous challenges, gain multidimensional flexibility and experience new levels of productivity as they seek to build tailored solutions to address what are uniquely their own business needs and requirements. That's the power of QuantTech.

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6

Have a truly dedicated chief risk officer

The role of the chief risk officer (CRO) is to provide corporate oversight and ongoing monitoring to ensure risk exposures are within prudent risk limits. But there is a lot that goes inside that definition.

As global risks increase and economic uncertainty persists, the risk functions—and the task of the CRO—within the financial services industry must increase in reach and importance to ensure organizational resiliency.

The CRO works with leaders in many parts of the organization, such as operations, technology, finance and accounting. Managers in each of these functions have different concerns, priorities, and points of view, but all hold some level of responsibility and accountability towards risk management.

Given this and the evolving challenges that organizations face, CROs need to:

- Position risk management in many departments as an insight-driven, business-focused resource rather than a compliance-driven, policing function.
- Enable the c-suite and the board of directors to look beyond risk indicators and reports to see the total risk landscape and thus enhance readiness and resilience.
- CROs also see the value of technology for capturing, monitoring, and analyzing data to generate a rich base of information. Data visualization and real-time communication provide timely tracking of many risks. Risk-specific tech tools have multiplied to the point where many risks can be quantified and monitored. So, CROs must assist the organization in adopting new technologies.
- Facilitate proactive communication about risk at all levels to strengthen the organization's risk culture and responsiveness to change.
- Ensure that all elements of the risk management and governance infrastructure work together.
- Establish ability to quickly respond to risks and risk events.
- Ensure that all risks are identified, considered, and mitigated.

Astonishingly, Silicon Valley Bank went approximately eight months without an active CRO. Its CRO stepped down from that role in April 2022 and a successor was not hired until January of 2023. Silicon Valley Bank was a fixture in the venture capital space, but it had no CRO while the venture capital market was spiraling. It is unclear how the bank managed risks in the interim period between CROs.

According to an FDIC report, Signature Bank also failed because of poor management. The report states that bank management did not always heed FDIC examiner concerns and was not always responsive or timely in addressing FDIC supervisory recommendations.

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