

WHITEPAPER

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The Road to Banking Resiliency and Adaptation: Early Warning Systems and Scenario Analysis

INTRODUCTION

Credit portfolio managers are facing more uncertainty and more volatility due to the ever-increasing interconnection and compounding of risk events. Over the last few years, we have witnessed this “domino effect” with the war in Ukraine, the impact on fuel & food prices, leading to high levels of inflation and the fastest increase in interest rates ever seen, resulting in bank failures, tightening of credit markets and the heightened risk of recession.

Credit portfolio managers are also faced with an increase in the volume and complexity of regulations and regulatory actions. The regulatory burden is driving financial institutions to seek cost-effective solutions to gain insight on where to focus today in order to protect margins and efficiently use capital. More and more, we see firms seeking to leverage their regulatory investments to gain business benefits in the short to medium term. This evolving landscape calls for a change in strategy, particularly as the traditional methods of credit portfolio management may no longer suffice.

Table of contents

Why Change; Why Now?	3
The Impact	3
A Banking Case Study	4
Resiliency and Adaptation	5
Early Warning Systems	5
Scenario Analysis and Stress Testing	7
Examples of Scenario Analysis	8
Proactive Approach to Risk Management	9
Conclusion	10
<hr/>	
Contact us	11
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WHY CHANGE; WHY NOW?

The following five key factors are driving the need to transform current approaches to credit portfolio management:

- **Credit Environment and Margin Pressure:** Some financial institutions lack the internal capability to gather portfolio risk dimensions to gain insight on “what do we need to worry about?”. This expands to working more effectively to protect margin and use capital by “gaining insight on where to focus today.”
- **Board Pressure:** Economic uncertainty is driving board pressure for more active risk reporting that forecasts potential outcomes accompanied by actionable plans driven by Chief Financial Officer (CFO) and Chief Risk Officer (CRO).
- **Technology Wave:** The emergence of new market players, including, for example, digital banks, means banks must be leaner, agile, and work more efficiently to protect margins.
- **Stress Testing and Capital Planning:** Financial institutions are required to implement strategies in order to project their level of risk and capital requirements under a “rapid” business scenario analysis approach.
- **Regulatory Requirements:** Regulatory expectations around capital calculation and stress testing processes are increasing. The new Final Basel III rules impose increased binding constraints on regulatory capital and liquidity, meaning regulatory rules are not risk-sensitive to account for portfolio correlations (i.e., concentration risk and diversification benefits).

10+

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WHAT IS THE IMPACT?

Here are some of the ways in which these factors are impacting credit portfolio management:

- **New Regulations:** The introduction of new regulations, such as Final Basel III, has made it mandatory for financial institutions to hold more capital against their credit portfolios. In addition, IFRS 9 requires financial institutions to recognize expected credit losses (ECL) on their loan portfolios, which has led to the use of ECL in credit portfolio management strategies to support business decisions at loan origination (in particular to understand and assess ECL impairment volatility on CET1, on earnings, and on profit erosion). This increase in the complexity and rigor of credit risk management requires financial institutions to adopt more sophisticated risk management practices and tools.
- **Challenging Business Environment:** In today's challenging economic environment, credit portfolio managers are required to be more vigilant and proactive in managing credit risk in order to make more effective use of capital. In addition, credit portfolio managers are required to work more efficiently in order to protect margins by providing insight to senior management on “where to focus today” in order to protect and efficiently use the capital.
- **Technology Innovation:** Technology has played a significant role in transforming credit portfolio management. The use of advanced analytics, machine learning, and generative AI are enabling credit portfolio managers to make more informed decisions and manage risk more effectively.

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Overall, credit portfolio management has become more complex and challenging due to the interplay of these factors. Innovative credit portfolio managers are investing in and making use of technology and advanced analytics to improve their risk management practices and generate better returns.

A BANKING CASE STUDY

Moody's recently collaborated with several leading banks in the Asia Pacific region to help these financial institutions improve their measurement and management of portfolio credit risk in response to ongoing macro-economic uncertainty. Through Moody's credit portfolio management platform, the banks were able to:

- Extract each borrower's conditional probability of default (PD).
- Understand the distribution of potential losses under different scenarios.

One of the key outcomes was enabling the credit risk management team to be more proactive to become more proactive in measuring and managing portfolio credit risk in a challenging economic environment.

This includes being running simulations and stress tests across numerous portfolio segments. The goal is to understand potential unexpected losses and the extract scenario-conditioned probability of default for each borrower. In addition to significantly enhancing the banks' existing CVaR systems, the solution also incorporated Moody's country-level macroeconomic scenarios and ad-hoc thematic scenarios to enhance stress testing capabilities.

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RESILIENCY AND ADAPTATION IN CREDIT PORTFOLIO MANAGEMENT

New regulations such as Final Basel III, Stress Testing and Resolution, and Recovery Planning are driving credit portfolio managers to change their views and approach to resiliency and adaptation. Recovery planning regulations require financial institutions to develop and maintain recovery plans that outline the actions they would take to restore their financial strength and viability in the event of severe systemic or idiosyncratic stress. Here are some of the ways in which recovery planning regulations are driving changes in credit portfolio management:

1 More comprehensive risk management:

1.1 Recovery planning regulations require financial institutions to identify and manage a wide range of risks, including credit, market, liquidity, and operational risks. This has led to a more comprehensive approach to risk management in credit portfolio management.

2 Updates to early warning indicators:

2.1 Recovery planning regulations require financial institutions to implement recovery indicators that flag when the recovery plan should be invoked. As a result, credit portfolio managers are required to develop more sophisticated early warning capabilities to identify when risk appetite limits might be exceeded.

3 Greater focus on scenario analysis:

3.1 Recovery planning regulations require financial institutions to test their recovery plans against a range of stress scenarios. As a result, credit portfolio managers are required to develop more sophisticated scenario analysis capabilities to identify potential risks and vulnerabilities.

4 More rigorous stress testing:

4.1 Recovery planning regulations require financial institutions to conduct stress tests to assess their ability to withstand severe stress scenarios. This has led to a more rigorous approach to stress testing in credit portfolio management.

Overall, recovery planning regulations are driving changes in credit portfolio management by requiring financial institutions to adopt a more comprehensive and rigorous approach to risk management and stress testing. Some examples of successful resiliency and adaptation strategies being applied by market leading credit portfolio managers include: taking a proactive approach, using early warning systems, conducting rigorous scenario analysis and stress testing.

EARLY WARNING SYSTEMS

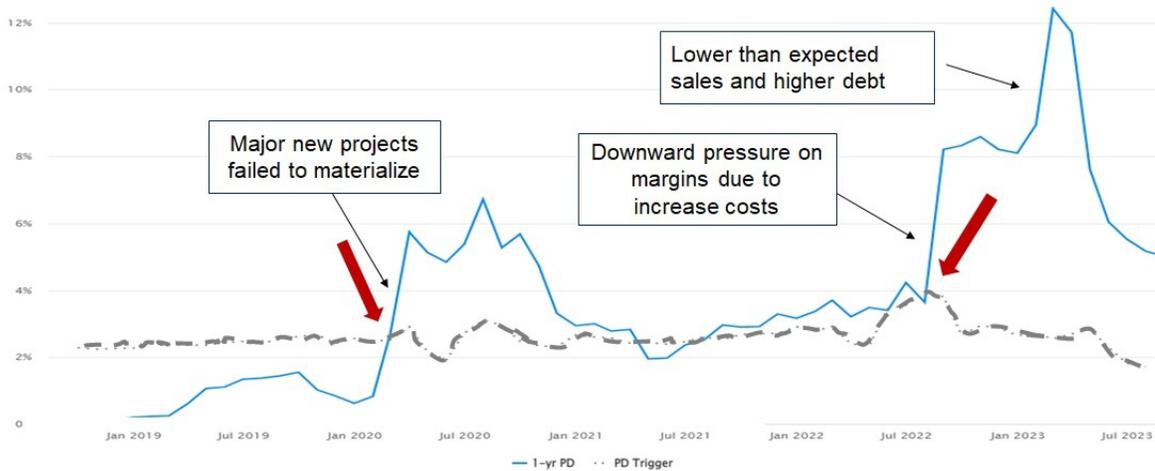
Early Warning Systems (EWS) are risk monitoring tools that help identify potential material credit deterioration or defaults at an early stage, allowing institutions to detect potential risks, take proactive measures, and minimize losses by addressing deterioration before it escalates. A robust early warning system helps to build the resilience of an institution by providing warning signals in time for preventative measures to be taken. Elements of effective early warning systems include:

- **Forward-looking measures that capture firm risk factors and stages in the credit cycle**
- **Decision rules for early warning**
- **An analytic framework that converts a variety of risk information into actionable steps**

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As an example, timely, forward-looking point-in-time probability of default measures provide a regularly updated view of a company's financial health that can be compared to trigger levels to determine when a company's credit risk is rising to levels that should concern a lender.

The chart below illustrates what such an analysis could look like, with the blue line showing the regularly updated view of the default probability of a given company, and the dotted line showing the 'trigger level' where risk becomes excessive.



In the context of EWS, artificial intelligence (AI) models are engineered to retrieve, collect, and unify large datasets from diverse sources, such as sentiment/news feeds, know your customer (KYC) data, forward-looking macro indicators, cyber, supply-chain, climate, ESG scores.

A central building block of EWS involves capturing transactional data, client behavioral profiles and associated loan lifecycles (loan-to-value ratios, days past due, debt coverage, utilization rate etc.), which are inherently time-dependent and provide crucial information under current and future market environments. Organizations are increasingly leveraging AI models, including generative AI, to transition from information gathering to decision-making, and to enhance workflows in assessing credit portfolio risk under various lenses to help prevent losses from default events.

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SCENARIO ANALYSIS AND STRESS TESTING

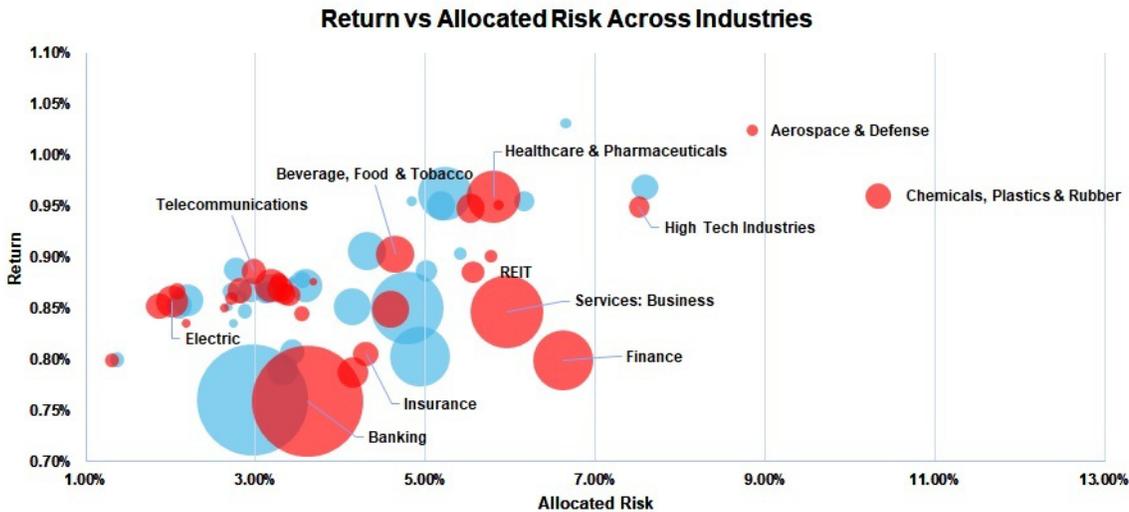
Scenario analysis involves assessing the impact of different hypothetical scenarios on the portfolio's performance, providing insights into potential risks, and guiding decision-making for risk mitigation, capital allocation, strategic and recovery planning.

Some of the benefits of scenario analysis and stress testing in identifying potential risks and evaluating the impact of different scenarios include:

- **Risk Identification:** Scenario analysis and stress testing help in identifying potential risks by examining various plausible scenarios. By considering a range of possible outcomes, these techniques can uncover risks that might not be apparent through traditional risk assessment methods.
- **Forward-Looking Perspective:** Unlike historical analysis, scenario analysis and stress testing allow for a forward-looking perspective. By simulating different scenarios, organizations can assess the impact of potential risks on their operations, financial performance, and strategic objectives.
- **Holistic Risk Assessment:** Scenario analysis and stress testing provide a holistic view of risks by considering multiple factors and their interdependencies. These techniques enable organizations to evaluate the combined impact of various risk factors, such as market conditions, regulatory changes, and economic fluctuations, on their business.
- **Decision Making:** Scenario analysis and stress testing provide valuable insights for decision making. By evaluating the potential outcomes of different scenarios, organizations can make informed decisions, develop contingency plans, and allocate resources effectively.
- **Sensitivity Analysis:** Scenario analysis and stress testing help in understanding the sensitivity of different variables to changes in the business environment. By assessing the impact of various scenarios on key performance indicators, organizations can identify the most critical risk drivers and prioritize risk mitigation efforts accordingly.
- **Stakeholder Communication:** Scenario analysis and stress testing facilitate effective communication with stakeholders, including investors, regulators, and board members. These techniques provide a transparent and evidence-based approach to discuss potential risks, their likelihood, and potential impacts. It is important to note that the effectiveness of scenario analysis and stress testing depends on the quality of data, assumptions, and modeling techniques used. Additionally, these techniques cannot predict the future with certainty but provide valuable insights into potential risks and their potential impact.

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One such analysis may consider the impact on return vs. risk of a given scenario (in red) vs. the baseline assumptions (in blue). Such analyses can help highlight potential concentrations to segments that may be adversely affected under the scenario.



EXAMPLES OF DIFFERENT TYPES OF SCENARIO ANALYSIS

Economic Scenarios: Financial institutions often use scenario analysis to assess the impact of different economic scenarios on their portfolios. For example, they may simulate scenarios such as a recession, inflationary pressures, or changes in interest rates to understand how these factors could affect their profitability, credit risk, and capital adequacy.

Market Volatility: Scenario analysis can be used to evaluate the impact of market volatility on investment portfolios. By simulating various market conditions, such as a sudden drop in stock prices or a spike in interest rates, investors can assess the potential losses and adjust their asset allocation or risk management strategies accordingly. Such scenarios may also consider the linkages between credit portfolios and balance sheet dynamics. For example, an analysis may consider the liquidity implications of a stressed credit portfolio and the adequacy of funding sources under various scenarios.

Natural Disasters and Climate Effects: Scenario analysis is valuable in assessing the potential impact of natural disasters on businesses and communities. For example, banks may use scenario analysis to estimate the potential extent of damage from hurricanes, or floods to their portfolios. This analysis may help them in setting lending policy, and in assessing potential risk mitigants. Institutions may also assess the longer-term impacts of climate change on their portfolios by considering how various possible future climate scenarios may translate to physical and transition risks within their portfolios.

Regulatory Changes: Scenario analysis is useful in evaluating the impact of regulatory changes on industries and organizations. For instance, banks may simulate scenarios related to stricter capital requirements or changes in lending regulations to understand the potential effects on their profitability, liquidity, and compliance.

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It's important to note that the effectiveness of scenario analysis depends on the quality of data, assumptions, and modeling techniques used. Additionally, scenarios should be plausible, relevant, and cover a wide range of potential outcomes to provide a comprehensive assessment of risks. A granular forward-looking framework facilitates active credit portfolio management and is needed to provide useful insights not only in the current credit environment but, more specifically, to better identify and anticipate emerging risks, as well as understand portfolio "hidden" concentrations and associated required actions.

Consequently, financial organizations need to fortify their forward-looking strategies, scanning the horizon and adopting a "grey rhino" attitude with an objective to better anticipate expected emerging risks, and form strategies that can be rapidly tested to assess impacts and adjust accordingly specific credit portfolio management actions.

PROACTIVE APPROACH TO RISK MANAGEMENT

Early identification and assessment of potential risks allow financial institutions to develop effective mitigation strategies, minimize financial impact and lead to long-term cost savings. This proactive approach to risk management not only reduces the negative impact on operations but also facilitates improved decision-making. Managers, equipped with a comprehensive understanding of potential risks and their consequences, can make informed decisions, effectively weighing the risks and benefits of various options.

A proactive risk management approach can bolster a financial institution's reputation among stakeholders, including customers, investors, and regulators. This increased confidence can lead to heightened trust and support, contributing significantly to the institution's overall success. Additionally, such an approach ensures regulatory compliance, a critical aspect in an industry subject to numerous regulations and compliance requirements. Active risk management helps institutions meet obligations and avoid the penalties, legal issues, and reputational damage associated with non-compliance.

Proactive risk management is crucial in ensuring business continuity, allowing financial institutions to prepare for potential disruptions such as economic downturns or market volatility. This preparedness minimizes the impact of unexpected events and maintains operations. Furthermore, a proactive approach can provide a competitive advantage, differentiating institutions from competitors and attracting stakeholders who value robust risk management practices. This advantage can lead to increased business opportunities and long-term success. In essence, prioritizing proactive risk management positions financial institutions for sustainability and long-term success.

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CONCLUSION

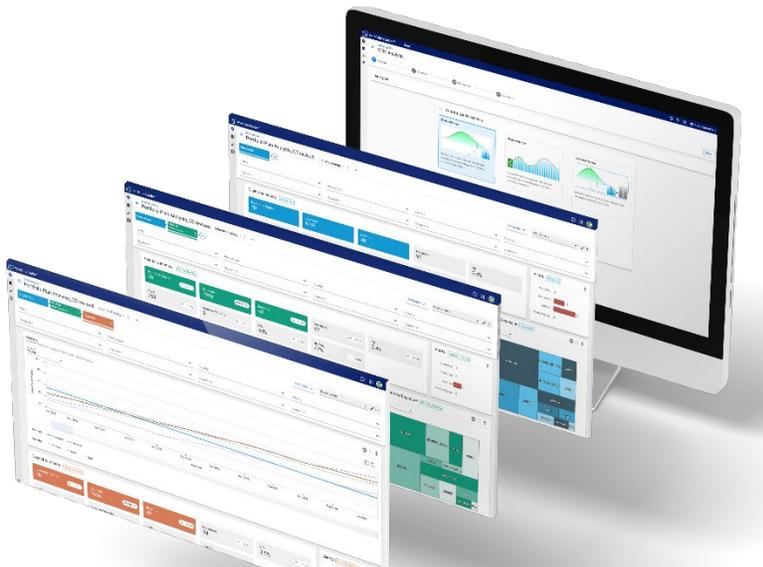
In our discussion, we have emphasized the escalating complexity in credit portfolio management brought about by various factors. These include geopolitical events, regulatory changes, and technological advancements. These factors have significantly reshaped the landscape of credit portfolio management, introducing new challenges and opportunities. The impact of these factors is far-reaching, resulting in a challenging business environment that necessitates more vigilant and proactive management of credit risk.

The wave of technological innovation has the potential to transform credit portfolio management, ushering in a new era of automation and advanced analytics.

We have also explored the concept of resiliency and adaptation in credit portfolio management, which is largely driven by new regulations such as Final Basel III, Stress Testing, and Resolution and Recovery Planning. Furthermore, we have highlighted the crucial role of early warning systems and scenario analysis in credit portfolio management. Early warning systems serve as a vital tool to identify potential material credit deterioration or defaults at an early stage. On the other hand, scenario analysis aids in assessing the impact of different hypothetical situations on the portfolio's performance. In this evolving environment, a proactive approach to risk management is of paramount importance. It allows financial institutions to craft effective mitigation strategies and minimize financial impact, all while ensuring regulatory compliance and business continuity.

LEARN MORE ABOUT ACTIVE CREDIT PORTFOLIO MANAGEMENT

As we navigate this evolving landscape, we invite you to leverage our award-winning expertise in credit portfolio management. With scenarios for more than 100 countries and forecasts for more than 12,000 variables, our team is ready to assist you in implementing early warning systems, stress testing, scenario analysis, and proactive risk management strategies. Contact us today to learn how we can help you navigate these challenges and seize new opportunities.



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Contact us to learn more about active credit portfolio management and the benefits it brings

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