OakNorth
CREDIT INTELLIGENCE

THE ULTIMATE GUIDE

Commercial Lending & Scenario Analysis

How to manage your downside and play for the upside in any economic environment

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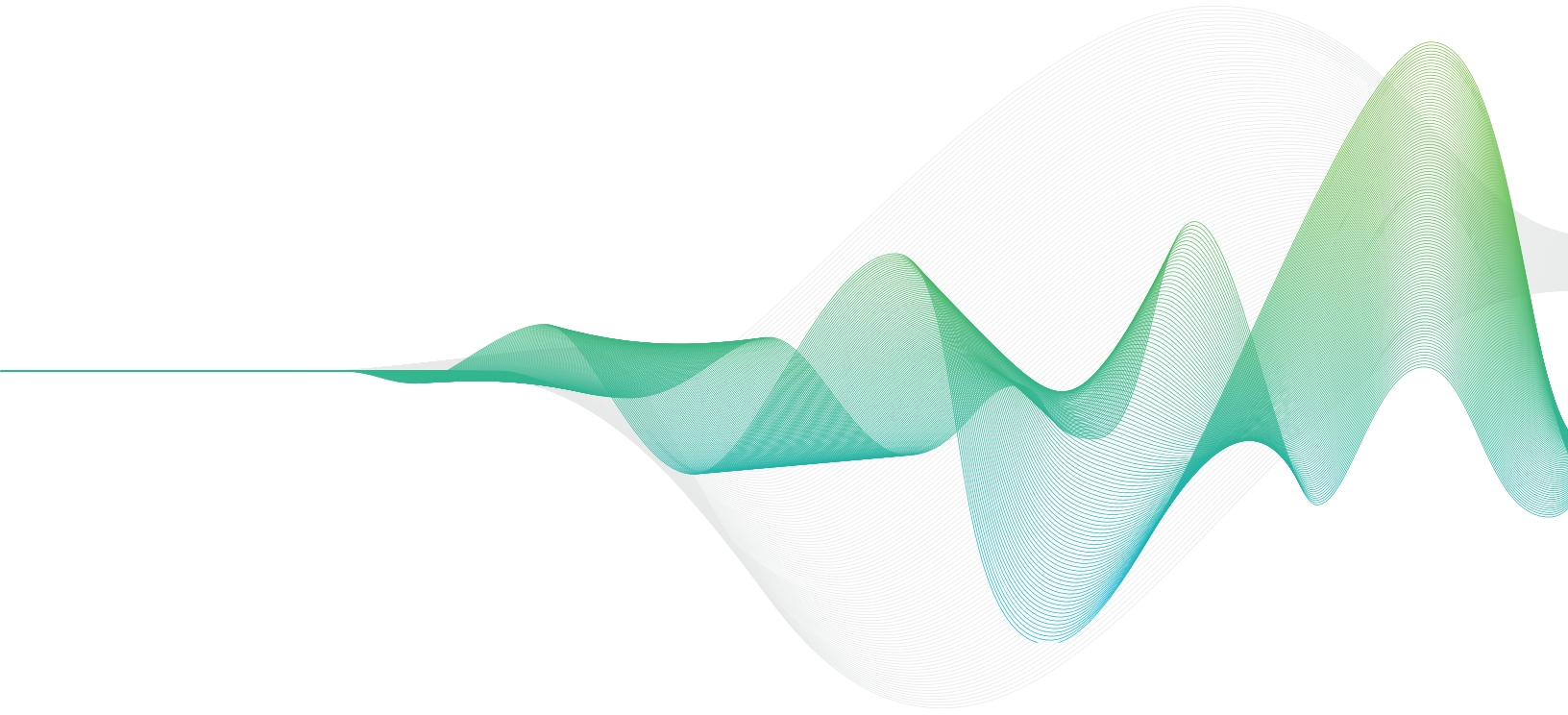
Protect against the downside, prepare for the upside

Banks are witnessing a tightening of credit metrics/ appetite, requiring them to conduct complex scenario analysis to stress test for multiple factors (credit risk, market risk, liquidity risk, capital risk, etc.). However, the inefficient and highly manual nature of most existing scenario analysis workflows leaves the credit risk department spending a lot of time on ad-hoc requests from management. In reality, it can take so long to protect the downside (i.e., focus on current relationships) that the credit risk team cannot focus on playing for the upside (i.e., by looking forward in a changing environment to find opportunity and grab market share). Scenario analysis should enable banks to better understand risk in their commercial lending and make the lending process less restrictive and more opportunistic. This has never been more true than in the current economic climate. Banks need the ability to run multiple scenarios on their portfolio with a forward-looking view to lend and support borrowers throughout the cycle.

This guide highlights why banks need to look past historical trends and use future-focused key variables to reduce uncertainty and adopt a sustainable scenario analysis framework. All underwriters want to be able to quickly assess risk in their portfolio and make more objective, better informed decisions.



Approach to scenario analysis

Scenario analysis in commercial lending has undergone significant changes in recent decades due to advancements in technology, changes in the economy, tightening credit policies, and evolving regulatory requirements.

Sophisticated and complex financial models

One major shift in scenario analysis is the use of more sophisticated and complex financial models to analyze risks and assess the potential outcomes of different scenarios. These models have become more data-driven and can take into account a wider range of variables and factors than earlier models (which were backward-looking and incapable of measuring for e.g., the pandemic impact).

Increased use of stress testing

Another important development has been the increased use of stress testing to evaluate the impact of extreme scenarios on a borrower's ability to repay the loan. This has become a critical component of scenario analysis since the global financial crisis of 2008 highlighted the need to assess the resilience of lending portfolios to adverse economic conditions.

Big data and advanced analytical tools

Moreover, the growing availability of big data and advanced analytics tools has enabled lenders to more accurately model and anticipate borrower behavior and assess credit risk. This has led to more sophisticated scenario analyses that can incorporate a broader range of potential outcomes and help lenders make more informed lending decisions.

Regulatory requirements

Finally, regulatory requirements have also played a role in shaping the evolution of scenario analysis in commercial lending. In recent years, regulators have placed greater emphasis on stress testing and scenario analysis, requiring lenders to demonstrate their ability to withstand adverse economic conditions.

Rising interest rates, an uncertain market, and stressed consumer spending

Lending expands and contracts with the economy—and those financial institutions that recognize economic shifts faster, and plan for them, have more time to adjust their strategies. However, uncertainty permeates the economic outlook today and the near future.

For banks, the effect of inflation, a potential recession, climate change, geopolitical instability, tighter spending, etc. often translates into supporting fewer borrowers. Furthermore, any change in the interest rate increases the cost of loans and if

banks do not approach repricing of loans more prudently, it could also increase the risk of borrower defaults, or the loss of customers as they refinance with other banks. These factors prompt banks to take a reactive stance when accessing the loan portfolio against economic shocks. Over-reliance on historical data often does not account for future economic challenges, leading to sluggish response times, poor visibility of risk, and a limited view of potential opportunities.

The limitations of your current scenario analysis/stress-testing exercises

Most banks are not able to go granular enough to properly stress test by borrowers and industries. While they fully appreciate the need to run their loan portfolio through alternative "what-if" future events, they are restricted by limited resources, data, and modeling capabilities. Even banks that have the resources to make the necessary investment to undertake such alternative scenarios struggle to extract actionable "so-what" outcomes to mitigate risk. This is because current models provide more generic outcomes for the wider portfolio without going down to the borrower level where targeted strategic action can be formulated. Even at the portfolio level, outcomes are based on what banks and the leading modeling companies have witnessed in their portfolio in the past. Internal models are almost exclusively based on historical data with limited or no consideration of current market trends.

LIMITATIONS WITH BANKS' CURRENT APPROACHES

1. **A lack of granularity**
Banks typically use a limited number of scenarios to assess credit risk, but they may not capture all the potential outcomes of economic and industry shifts. Current scenario analysis is usually conducted at NAICS 2–3-digit sector level and does not go down to the borrower level. These tests are therefore unable to provide credit analysis or a credit focused outcome for individual borrowers. This lack of granularity may also result in loss of market opportunity. For example, during COVID-19 the hospitality sector broadly had a negative outlook. But looking down to 4-digit NAICS code, there were certain hotel types that were performing very well. E.g., a boutique hotel in the countryside catering to cycling holidays performed very well, whereas airport and conference hotels didn't perform well at all as there were no conferences happening and limited travel.

2. **Limited forward-looking analysis**
Banks' scenario analysis models are based on historical correlations between macroeconomic factors and loan losses. Recent factors such as economic turmoil, COVID-19 pandemic, and the U.S. bank's distressed commercial property values have caused discontinuity in historical correlations and banks therefore need to incorporate external data to fully understand borrowers. Banks need to see where their borrowers are going as opposed to where they have been - something that their existing models fail to show.

3. **Over-reliance on historical data**
Historical data is used as the basis for scenario analysis, but it may not be relevant to current or future conditions.

4. **Inadequate stress testing**
Banks may not apply a sufficient level of stress testing to assess how their portfolio would perform under extreme market conditions.

5. **Lack of integration with credit risk management**
Scenario analysis may be conducted in isolation from other credit risk management activities, leading to a fragmented approach to risk management.

6. **Limited flexibility**
The traditional approach to scenario analysis may not be flexible enough to capture emerging risks or changes in risk factors.

7 **Difficulty in capturing non-financial risks**

The traditional approach to scenario analysis may not capture non-financial risks, such as regulatory or reputational risks, which can have a significant impact on credit risk.

To survive the economic turbulence, banks need to be able to:

- Identify risk in their loan portfolio earlier with scenarios that consider modern economic uncertainties.
- Understand potential vulnerabilities in their loan portfolio at the granular, industry and borrower level.

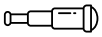
A granular view informs:

- The sources of risk and underlying drivers behind it.
- Strategies to either de-risk portfolio or unlock growth.

It's time to move past outdated measures and use future-focused key variables to reduce uncertainty and create a sustainable scenario analysis modeling process. You don't drive a car looking in the rear view mirror, you glance at it occasionally but focus most on what's going to come in front of you i.e. forward-look.

Ingredients of a best-in-class scenario analysis framework

The right scenario analysis exercise that ties analysis to action should have the following attributes.

	ATTRIBUTE	WHY IT MATTERS?
	Forward look	Because historical correlations are broken
	Granularity	To tie analysis and trends to action on the front-line
	Diverse range of scenarios	Scenario analysis is not just a theoretical regulatory requirement
	Configurable scenarios	To align scenario analysis to bank's credit risk policy
	Diverse data source	To triangulate and fully understand borrower performance
	Source of risk	To create effective risk mitigation strategies
	User-friendly interface	To stop getting lost in spreadsheets

In the absence of these above attributes, banks' default stance is to assume a higher level of risk and price accordingly, or worse, not lend to certain sectors/industries at all. Scenario analysis should enable banks to better understand risk in their commercial lending and make the lending process less restrictive and more opportunistic. More so, during current volatile times, banks need the ability to run multiple scenarios on their portfolio with a forward-looking view to lend and support borrowers through the cycle.

ON Industry Forecasts enables less restrictive and more opportunistic lending through the cycle

ON Credit Intelligence (ONci) is the industry's first data-driven software that provides a granular, 360-degree view of every commercial borrower, using continuous monitoring and a forward-look view of risk. This enables commercial lenders to identify opportunities faster, flag credit issues earlier, assess risk more accurately, reduce the cost to serve, and increase profitability across the loan lifecycle. With ONci, banks lend smarter, faster, and more.

274

Forward-looking ON Industry Forecast models

20x

More granular analysis than most banks

960

Unique industries covered by ON Industry Forecasts

ON Industry Forecasts are one of the key inputs into the ON Credit Intelligence Suite delivering granular, forward-looking insight, that enables banks to improve efficiencies, lower credit risk, and drive profitable growth through economic cycles.

What are ON Industry Forecasts?

With forward-looking macroeconomic scenarios applied to 274 industry groups, ON Industry Forecasts are highly granular, covering c.92% of all industries in the US (i.e., 960 unique industries), as cataloged by the NAICS classification system. These forecasts are 20 times more granular than the analysis conducted by most banks and credit tools today. A rich dataset combined with robust statistical models are used to generate the ON Industry Forecasts.

The ON Industry Forecasts estimate year-on-year (YoY) changes in industry-level revenues, costs, working capital requirements, and capex for commercial and industrial (C&I) space. These financial estimates are then overlaid on individual borrowers' historical financial data and are used to forecast their cashflows, specifically CFADS (Cash Flow Available for Debt Servicing) over the coming quarters.

Interestingly, this often reveals that the forecasted financial profile of all borrowers in an industry is not always the same. Borrowers' existing financial profiles are merged into the industry forecasts to ensure that their financials, in addition to industry trends, are used to determine the future health of each borrower. Borrower-level financials (such as revenue, costs, working capital, etc.) are forecasted by calculating any changes that result from the overlay of the ON Industry Forecasts onto the borrower's historical financials. Therefore,

rather than imposing industry EBITDA margin on all the borrowers in the industry, ONci factors in the cost increase over each borrowers' existing cost structure and considers borrower-specific characteristics.

The table below illustrates two borrowers, A and B, that have a historical EBITDA margin of 30% and 40% and a forecasted 2023 EBITDA margin of 30.6% and 40.5%. In this example, both borrowers retain their historical differences.

	BORROWER A		BORROWER B	
	2022A	2023E	2022A	2023E
% Growth in revenue (from ON Industry Forecasts)		11%		
Revenue	100	111	100	111
% Growth in costs (from ON Industry Forecasts)		10%		
Cost	70	77	60	66
EBITDA	30	34	40	45
EBITDA margin	**30%**	**30.6%**	**40%**	**40.5%**

Why does granularity matter?

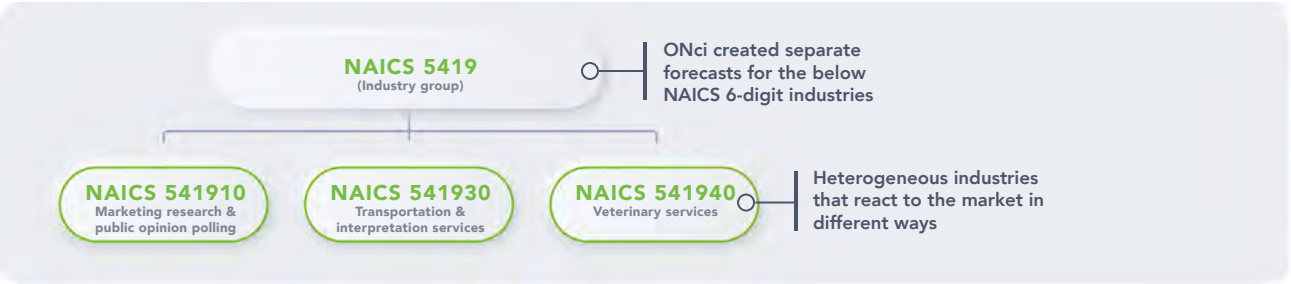
Banks typically use a dozen or so models to assess the impact of macroeconomic conditions on broad sectors - typically at the NAICS 2-digit level. However, significant variations in business dynamics and outcomes exist between different industries within broader sectors. For example, within the Consumer Cyclicals sector, the dynamics of "Apparel Production" differ significantly from "Auto Retail". This requires analysis at a more granular level than standard bank practices. Hence, the traditional approach of analyzing a credit within the broader sector framework will not accurately identify all relevant risks, unless it is accompanied by granularity and fundamental overlays to capture prevailing trends. ON Industry Forecasts allow institutions to identify risks in their loan portfolio at a much more granular, loan level, enabling them to develop more targeted and tailored credit policies than those informed by analysis only at the sector level.

A better approach to granularity

ON Industry Forecasts are designed to achieve an analytically appropriate level of granularity. The most granular 6-digit level NAICS code is therefore not always selected by default. ONci uses the following process to ensure an analytically appropriate level of granularity is achieved.

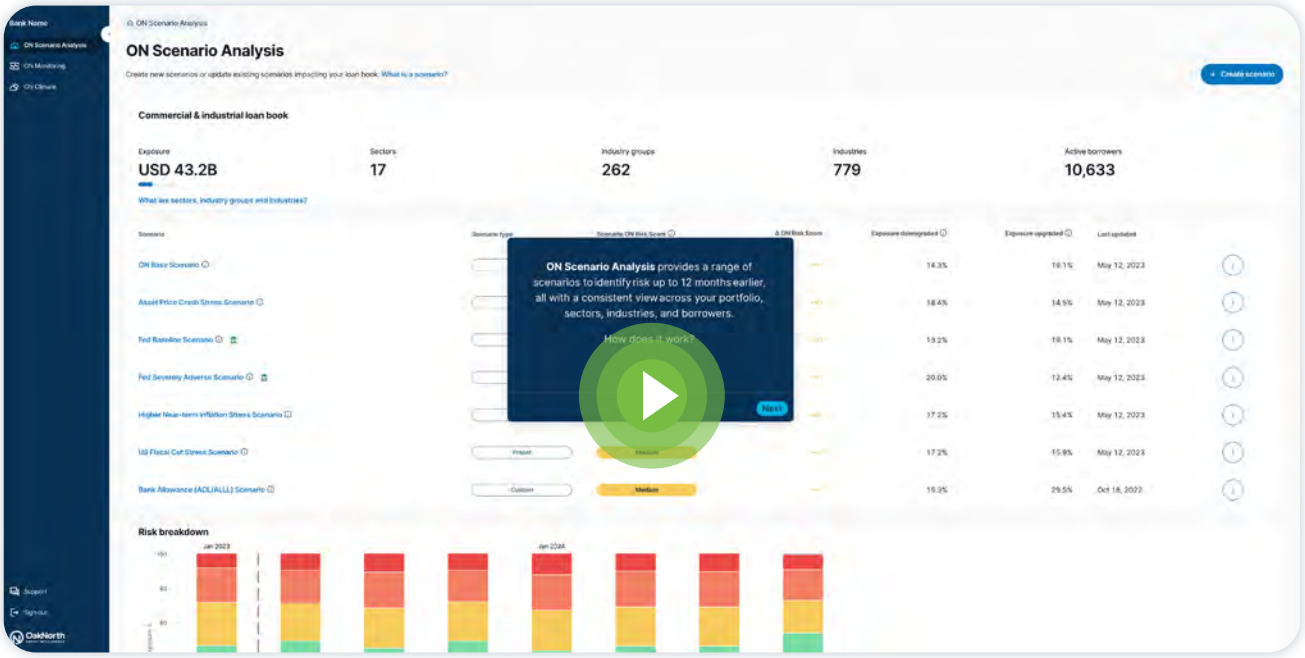
If businesses under a NAICS 4-digit level are homogeneous and characterized by similar products and services offered, the customers and end-markets they cater to, cyclicality, industry drivers, and macro drivers, ONci prepares industry forecasts at the NAICS 4-digit level, as using information at a more granular level, in this case, does not add any additional analytical insights.

If the industries within a NAICS 4-digit level are not homogeneous, ONci goes down to the NAICS 5-digit level and does a similar exercise to assess if the performance of industries at that level is homogeneous. If not, ONci goes a layer deeper and creates forecasts at the NAICS 6-digit level.



ON Scenario Analysis - analyze your entire C&I portfolio in multiple economic scenarios and identify risk up to 12 months earlier

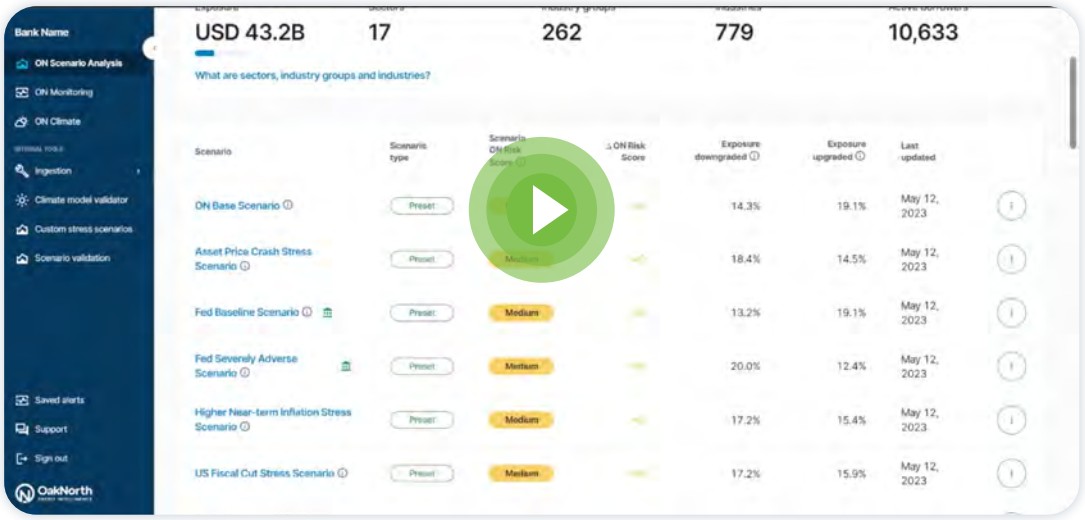
ON Scenario Analysis is a strategic tool that allows banks to quickly run multiple macroeconomic scenarios on their loan portfolio and identify risk up to 12 months earlier with forward-looking ON Industry Forecasts. Risk professionals get access to immediate and actionable intelligence on the C&I portfolio down to the individual borrower level.



Take a self-guided detailed product tour today

- Run scenarios on an entire loan portfolio without worrying about limited and costly resources, backward-looking data, technology, and modeling capabilities.
- Plan for market changes and identify risk up to 12 months earlier to help formulate targeted risk mitigation strategies to reduce defaults and charge-offs and better manage capital requirements.
- Identify which areas and borrowers in the loan portfolio require the most urgent attention, based on the anticipated macroeconomic shifts, and prioritize them for review.
- Uncover opportunities for growth, even in turbulent economic cycles, making the lending process less restrictive, thereby supporting the middle and lower middle market in times of stress.

ON Scenario Analysis does not replace banks' existing stress testing and scenario analysis processes, but offers them added flexibility to run multiple versions of the future state of the economy. Banks can also easily input their existing scenarios into ON Scenario Analysis and receive granular outputs – down to the borrower level – and incorporate forward looking elements. ON Scenario Analysis enables banks to reduce surprises. Banks can eliminate cases going straight from satisfactory to criticized and too late to action.



ON Scenario Analysis – Deliverables

ONci creates industry forecasts for different plausible macroeconomic conditions, called scenarios. ON Scenario Analysis offers a library of scenarios that banks can easily start using today.

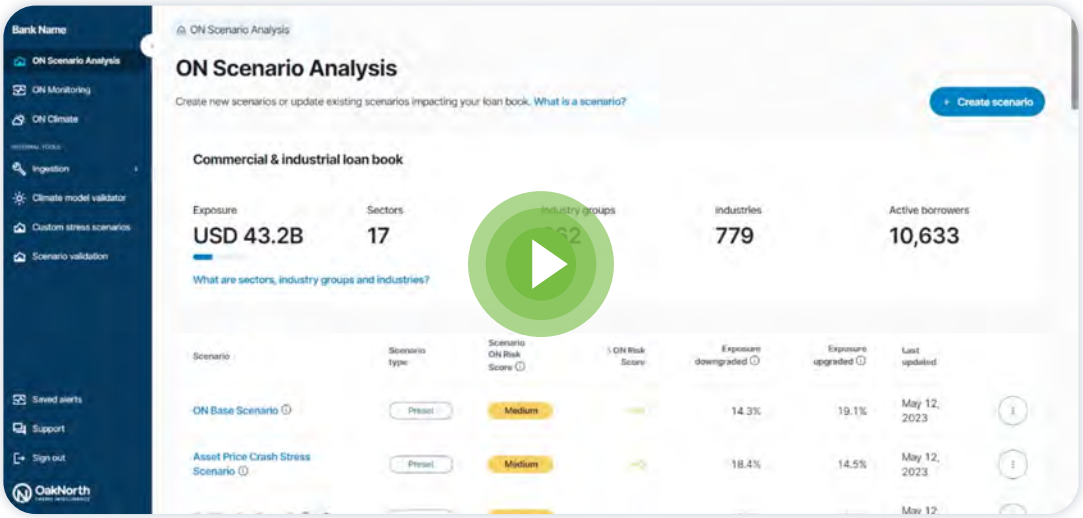
- The ON Base Scenario represents the most anticipated state of the economy.
- In February 2023, The Federal Reserve recommended banks use two scenarios (i.e., baseline scenario and severely adverse scenario) to conduct stress testing on their lending portfolios. ON Scenario Analysis has added these two scenarios to the library of scenarios on offer.
- There are also a variety of stress scenarios, including: high inflation, asset price crash, and US fiscal cut. These scenarios are revisited each quarter to provide latest market themes and address market concerns.

These take into consideration 20-30 macroeconomic variables and are designed to help banks understand the potential impact of prevailing economic trends on their C&I loan portfolios, such as the intensity and broader impact of the Russia Ukraine war. The macroeconomic outlook for these scenarios is obtained from Oxford Economics which is then applied to ON Industry Forecasts to provide banks with granular insights at the portfolio, industry, and borrower levels.

Banks can also bring in their internal scenarios to assess the potential impact of future economic scenarios across their loan portfolio.

EXAMPLE LIBRARY OF SCENARIOS

ON Base Scenario	Represents the most anticipated state of the economy
Fed baseline scenario	Recommended in February 2023 by The Federal Reserve to conduct stress testing on their lending portfolios
Fed severely adverse scenario	Recommended in February 2023 by The Federal Reserve
High inflation	Stress scenario
Asset price crash	Stress scenario
US fiscal cut	Stress scenario



See how ON Scenario Analysis stacks up against bank's existing scenario analysis

	ON SCENARIO ANALYSIS	TRADITIONAL SCENARIO ANALYSIS
Granularity	Forward-looking view of risk at individual borrower level i.e., NAICS 6-digit level	Most analysis is done at portfolio and sector level i.e., NAICS 2–3-digit level
Risk identification	Prepare for the unforeseen risk and opportunity within changing macroeconomic environment by identifying risk up to 12 months earlier	Disconnected view of risk leading to lost growth opportunities
Data source	Bank's existing data + ONci's $420B proprietary US C&I lending data + 400M datapoints from 3rd party vendors, economic data	Historical borrower performance data in core banking systems
Integration	API integrations with your internal systems and CRMs, such as nCino	Analysis is done in silos with no integration to other credit risk management activities
User interface	Intuitive web-based UI	Excel spreadsheets
Cost	Cost-effective SaaS model	High cost of hiring specialized staff to develop in-house scenarios
Time to value	Start realizing value within 6 weeks of implementation	Cumbersome and disorganized process which is ad-hoc and mostly reactive to market performance

Timeline to value

Implement ON Credit Intelligence (ONci) within six weeks of contract signing and start realizing value.

Launch within six weeks of signing

WEEK 1-2

DATA SHARING

- ONci provides and steps through ONci data specification
- ONci and bank data teams collaborate to construct data input file
- Bank shares initial iteration of data input file
- ONci reviews and sends back questions/observations to bank within 48 hours of receiving input file
- Workshop is then held to discuss questions/observations
- Bank provides revised data input file

WEEK 3-4

DATA INGESTION & REFINEMENT

- ONci ingests bank data
- Workshop is then held to field questions around outputs
- ONci and bank collaborate on refining data and edge cases

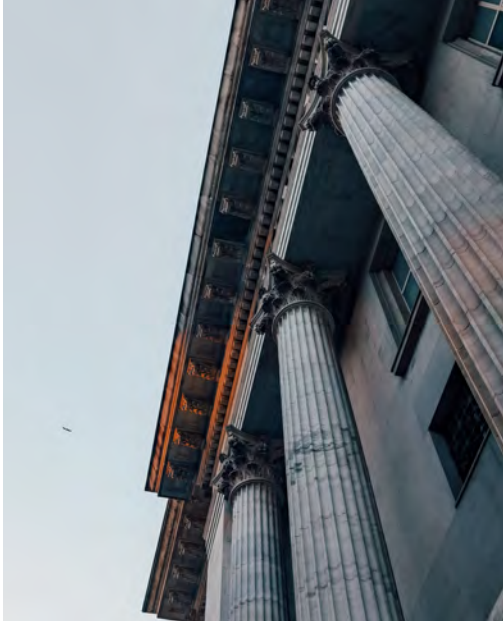
WEEK 5-6

FINAL VALIDATION & LAUNCH

- ONci and bank validate final outputs
- ONci kick-off and demo

Outcome

- Bank's data ingested and live in ONci
- Minimal resources required from bank (data/IT resources) to go live
- ONci outputs available immediately post data-ingestion



> "Your team's [ONci] responses were always immediate and your experience, working with other clients in the financial space was invaluable.
>
> The process could have been fragmented but with the constant communication ended up evolving fluidly. We especially appreciated the constant connection between our bank data teams and yours [ONci] to ensure that we collected and presented the data essential for the analysis."
>
> **SENIOR VICE PRESIDENT OF A TOP 10 US BANK**

ON Scenario Analysis

Manage risk to lend smarter

Improve efficiency to lend faster

Drive growth to lend more

Identify risk up to 12 months earlier

274
Forward-looking ON Industry Forecast Models

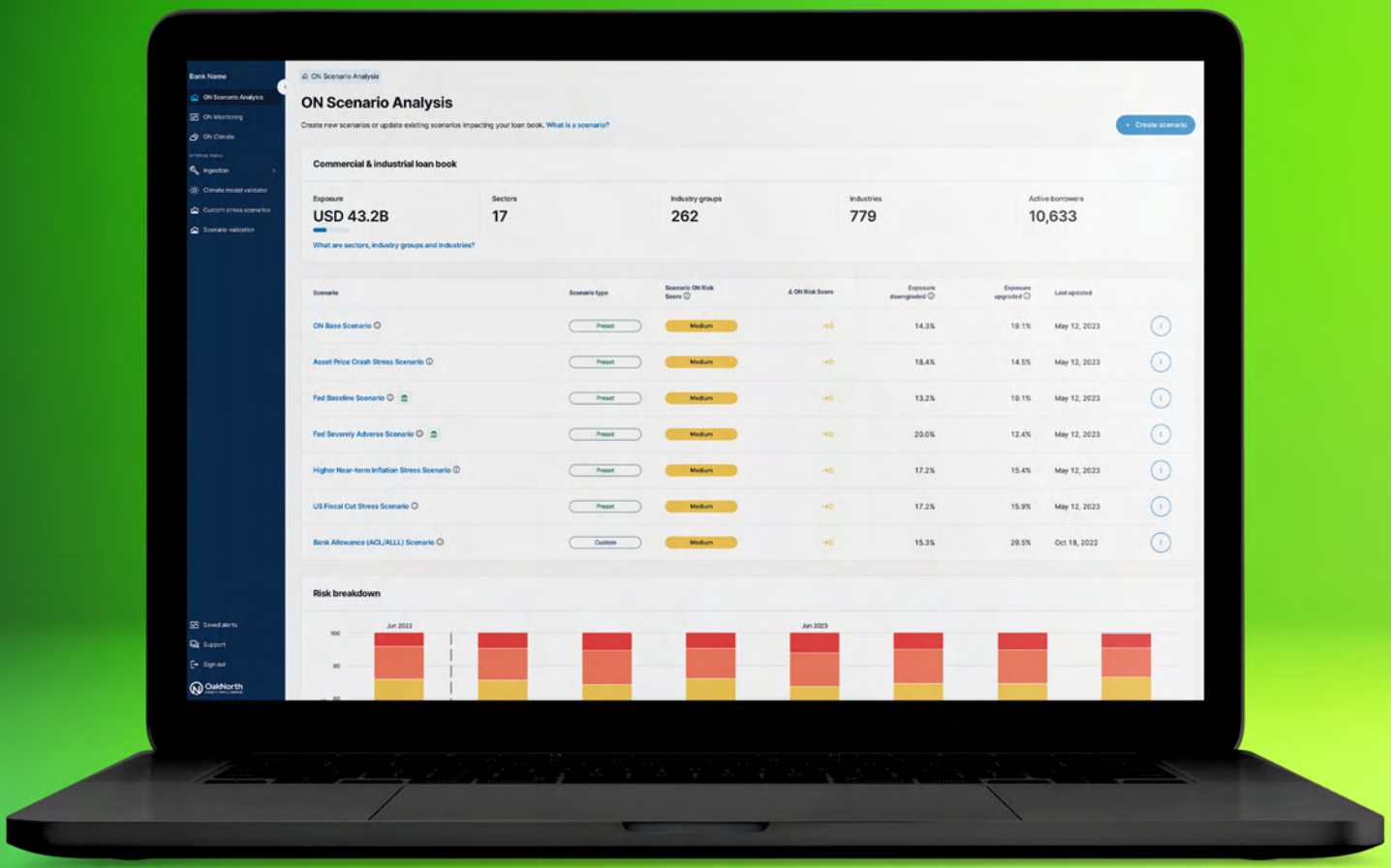
20x
More granular analysis than most banks

80k
Different regression models run for each industry forecast

Informed by

$420B+ of proprietary C&I lending data

400M datapoints derived from alternative third party & economic data

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