




Key to finding the right portfolios to invest in as we emerge from the global pandemic is having the right tools in place for risk and performance measurement.

Financial Services

Managing and Optimizing Credit Portfolios on a Risk Adjusted Basis

WHITE PAPER

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Setting the post-pandemic economic scene

Every industry has felt the impact of Covid-19 in one way or another. Those faring the worst – hospitality, airline, oil, and retail businesses – have had governments step in to soften the impact with assistance packages, financial support, moratoriums, and more. However, these measures may prove to be more of a temporary ‘band-aid’ fix when the longer term impact of the post-pandemic world is revealed. Because while most economies around the world have seen single digit percentage contractions so far, arguably, the worst is yet to come.

As governments and central banks shift their focus from containing the impact of pandemic to jump starting industry growth, there will inevitably be sectors of the economy that are going to face massive cash and revenue crunches which could potentially result in a massive amount of non-performing loans (NPLs).

So how about sectors that have weathered the storm so far? Firms in the technology, pharmaceuticals, and e-commerce spaces have been presented with a range of new growth opportunities during the pandemic, putting them in a better position. But these are also the sectors that will receive significant investment attention, and will in turn create a highly competitive market.

Now turning our attention to financial institutions (FIs), the needles that knit this precarious global economy together. As most FI portfolios contain a mix of sectors facing challenges and opportunities, the previously mentioned points do not affect them per se. The major challenge for them is finding the right portfolios to invest in to best optimize their businesses. This challenge is exacerbated if they don’t have the right tools for risk and performance measurement.

This paper will explore how firms can tackle the challenges to manage post-pandemic stress scenarios and identify growth opportunities and explore the tools available to ensure a more agile, optimized, and sustainable future.



Managing stress scenarios while identifying growth opportunities

Financial institutions across the world are facing decisions comparable to 2008 crises to stay on a growth trajectory and be competitive in the ever-evolving markets of digital banking, currencies, and virtual economies.

Broadly speaking, the issue facing banks in a post-pandemic is two-fold:

1. How do we best manage existing portfolios to maintain competitive advantage and expertise yet minimize NPLs?
2. How do we pivot our business towards high-growth industries and manage their performance in unforeseen stress scenarios?

However, these two sides of the scale need to be explored further to be managed adequately, (see figure 1).

Figure 1: NPLs pre-pandemic core portfolios vs identification of post-pandemic opportunities



Challenges in managing existing portfolios

When managing cash stripped existing portfolios such as hospitality, airline, and oil, banks will need to analyze the real impact of NPLs. This is bound to reflect sooner rather than later.

There is clearly a lot to consider as we move forward. So where do you start? As the famous proverb goes – we can learn about the future by looking at the past.

Once the impact is quantified to an extent with a certain degree of confidence, the next step is how to best manage and contain it. The final step here is to work out how to embed the findings into the risk and return based credit portfolio origination as well as management.

Challenges in identifying growth opportunities

There is a lot of commentary available for the industries which have benefited from the pandemic. However, to work out what is best for their own specific firm, they need to find their own ways to identify avenues of growth and opportunities of investment. They need to analyze the performance of individual firms and measure risk and return on such investments. Last, but by no means least, they need to measure sustainability of these sectors, especially given the fact that global economies are facing an ever increasing number and higher impact of risk events.

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The building blocks of a post-pandemic risk and capital management framework

In the late 1990s and early 2000s, some of the biggest banks started implementing frameworks and models to identify and measure capital to make their businesses economically viable and sustainable over a long period of time. These models considered some of the key attributes of the banks' credit portfolios such as:


- Concentration risk within credit portfolios
- Sector/industry wise credit risk analytics
- Business unit/product line wise credit risk and performance analytics
- Default and credit migration risk
- Credit portfolio and risk factor correlation that can lead to ripple effect in credit deterioration (as seen in 2008 crises).

These models, however niche and implemented across certain large banks, were at the center of their risk appetite and capital planning frameworks. Needless to say, these banks fared better than others in the 2008 financial crisis. However, after this time, the focus shifted largely to regulator-imposed capital

calculations and planning, and banks scrambled to meet regulatory deadlines.

Regulatory capital requirements have undoubtedly gone a long way to restore general confidence and trust in financial institutions. But the regulators that imposed these requirements have also struggled to make them risk sensitive enough and have therefore missed some key measures of risk such as concentration risk.

The answer to tackling post-pandemic stress scenarios is to revisit these models but extrapolate them over a more holistic framework. Redirecting a bank's policies and core businesses over a short period of time may be a challenging prospect, however, this is more necessary than ever in the ever-changing dynamics of the post-pandemic world.



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Figure 2: Building blocks of post-pandemic risk and capital management framework

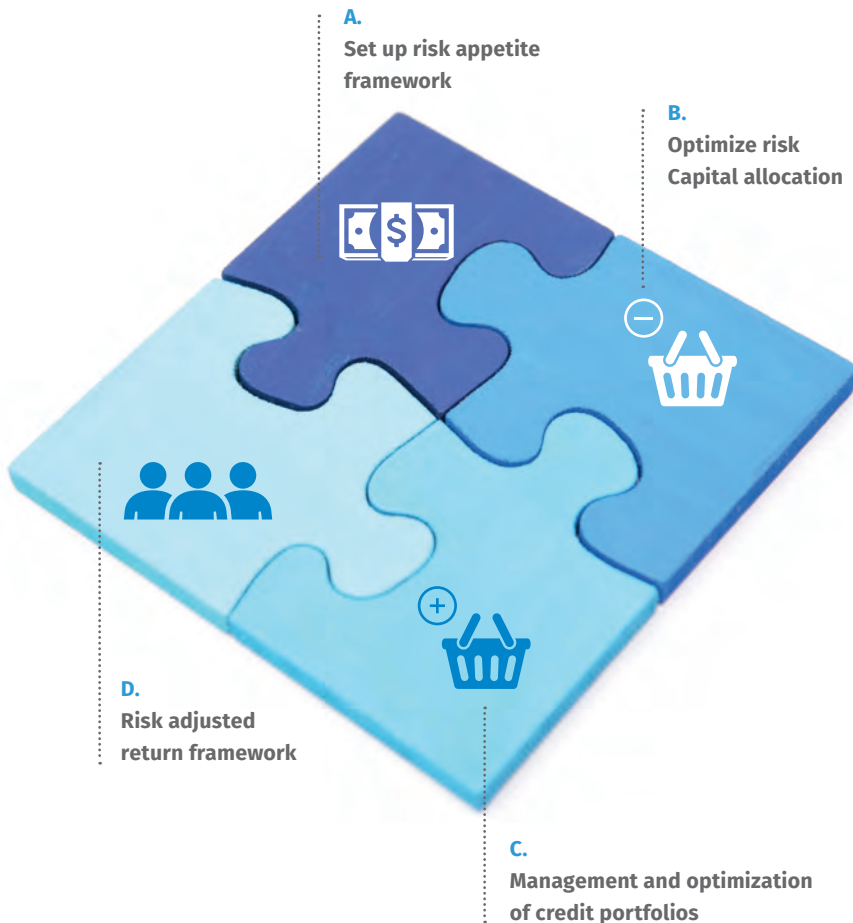


Figure two illustrates the principles behind what such a framework could look like, followed by a more in-depth analysis of what these building blocks should address.

A) Start by setting your risk appetite.

As a part of their internal capital planning processes, most banks set their 'risk appetite'. This defines the risk/reward ratio the bank is comfortable with and may depend on the following:

- What is the nature of the business and portfolios your bank is dealing in?
- What is the strength of your bank in terms of credit quality and interest income collections?
- Is your bank: digital, traditional, or a special purpose bank?
- What is the growth strategy of your bank?

B) Allocate and optimize your risk capital

This step aims to marry the traditional with the growth portfolios within a bank. There is no quick fix for risk capital allocation, so it requires detailed consideration of the following key questions:

- Which industries does your firm have the most expertise in with respect to growing and managing your investments?
- Based on local economic conditions of various entities, which industries show future growth for your firm?
- Do you know where your competitive advantage is? More risk capital should be allocated where your firm has its competitive advantage.

C) Manage and optimize your credit portfolios

Once your risk appetite has been defined and your risk capital has been allocated, it's time to focus on the management and optimization of credit portfolios:

- How much risk capital is still available after simulating losses from risk appetite definition?
- How can you change the mix of the portfolio while continuing to invest in new opportunities?
- How can you continuously monitor changes and pivot as needed?

D) Time to set up your risk adjusted risk framework

Once all these questions have been answered, the next crucial point to consider is what tools are available to execute the theory, and create a risk adjusted framework to calculate your capital and measure your credit portfolio health.

The tools that hold the answer are: Economic capital (Ecap) and risk adjusted measures of return on capital and return on risk adjusted capital. The next section will explore these tools in more depth.

Exploring economic capital

As previously mentioned, regulatory capital aims to protect depositors and instill confidence in our banking system. ECap on the other hand is the true measure of capital required to fund business competitively yet sustainably. But why is this?

ECap aims to protect and cover shareholders from potential economic losses within a given confidence level, over a given time horizon, consistent with a certain target or standard. It is based on holding enough equity-like claims to meet the possibility of loss due to the risks the institution takes upon itself.

Many believe ECap is a better measure of risk than regulatory capital. This is because it is an internal estimation that supports decision making. Regulatory capital on the other hand is set by external regulators to assess banks' financial viability.

ECap is directed to cover probable losses arising from business activities and so, it reflects the evaluation of the economic realities of the business. It does not assume that a bank's portfolios are granular as regulatory capital does, and is more risk sensitive as it does not suffer the common industry-wide calculation methodology caps and floors. The usage and treatment of ECap can be adjusted to make more business sense.

ECap also has regulatory benefits. To comply with Pillar 2, banks will have to develop and use models for ECap to allocate capital to business activities based on how much risk and what type of individual activity contributes to the bank's portfolio of risks.

Traditionally ECap is a sum of unexpected loss across credit, market and operational risk types.

$$\text{ECap} = \text{VaR}(\text{Credit Risk}) + \text{VaR}(\text{Market Risk}) + \text{VaR}(\text{Operational Risk})$$

However, in the post-pandemic world, among the components of ECap, credit risk (VaR) is going to be the key and the biggest component of a bank's risk and performance, which we will explore next.



The many benefits of Credit Value-at-Risk (VaR)

Credit portfolio risk can be measured using Credit Value-at-Risk (VaR) models, which includes key components missing from regulatory capital, the first of which is concentration risk. One of the biggest factors that makes Credit VaR more risk sensitive and closer to business than the regulatory Credit RWA calculations. Regulatory capital makes incorrect assumptions that the bank's portfolios are independent of each other and that there is only one source of systematic risk.

If the components of ECap and credit portfolio management are integrated into the risk management culture of a financial institution, they can benefit from an early warning system.

Credit VaR also shows correlation between sectors and risk factors. Sectoral concentration and risk measurement allows banks to identify the sectors which are dependent on each other for overall credit health. For example, during the pandemic, we saw a direct correlation between airline, tourism and hospitality, and oil sectors. This provides banks with cutting-edge information about potential losses in multiple sectors due to changes in the oil price index rather than just one sector. Some models implement the correlation based on asset returns of the constituent to identify the risk on the books of a firm, due to the non-granular nature of the economy and businesses.

Credit VaR provides banks with the ability to run key business metrics such as risk-based-pricing of large transactions or retail product lines. It also provides a more risk sensitive capital allocation plan to different business units, in addition to ex-post analysis such as

performance evaluation of business units and product lines.

If the components of ECap and credit portfolio management are integrated into the risk management culture of a financial institution, they can benefit from an early warning system. Economic capital and Credit VaR methods can be fed with forecasted MEVs (Macro Economic variables) and market factors. These forecasted numbers can provide the bank with an early warning mechanism in relation to any credit losses. Any future changes and impacts, including those brought on by pandemics, can be more easily evaluated and managed. FIs need to inculcate the risk practices which help foresee the future stress events and change the portfolio mix on pro-active basis rather than managing the problem.

A key output of Credit VaR models is the ability to see unexpected losses within a given confidence level. This output net of provisions already made for expected loss provides FIs with a clear view of the risk taken vs. appetite and allows planning of a risk appetite framework for future business and stress scenarios.

The final benefit of a Credit VaR and Ecap framework is the ability to maximize risk-adjusted return on capital. In layman's terms, this is the performance of a FI adjusted for the amount of risk taken to achieve the same. The general convention to calculate RAROC is as below:

$$\text{RAROC} = \frac{\text{Performance}}{\text{Risk}}$$

$$= \frac{\text{Revenues} - \text{Expense} - \text{Expected losses}}{\text{Economic Capital} + (\text{Credit VaR} + \text{Market Risk VaR} + \text{Op Risk VaR} + \text{Other Capital Reserves})}$$

But how is RAROC best implemented in practice?

RAROC in practice

Successful implementation of RAROC framework requires buy-in from all the levels and business units in the FI. Hence, FI leadership needs to set guiding principles that all levels and business units (BUs) follow. Some of these principles are outlined in *figure 3* and explored below:

- Top-down implementation
- Siloed implementation of RAROC framework by BUs defeats the object of an enterprise-wide credit framework.

Therefore to ensure the framework is implemented effectively across the firm, a top-down vision definition, implementation and enforcement of a RAROC framework is the most critical component of advancing the post-pandemic risk culture.

Auditable and Transparent

One of the biggest challenges FIs face in the implementation of RAROC framework is the auditability and transparency of Credit VaR, and how to make it easy to understand and explainable. To calculate Credit VaR and to do heavy lifting of large volumes of data and execute complex calculations, implementing a software solution is a necessity. Some FIs that have tried to implement RAROC framework

in traditional software solutions suffer from the confidence and justifiability of the results provided by Credit VaR calculations. This is mostly due to implementation of black-box solutions which lack intuitive explanation and full transparency of MEVs, and data being fed into Credit VaR models. Credit VaR solution should provide the following:

1. Full auditability of results to internal/ external auditors, regulators, investors, and other market participants
2. Intuitive framework which can be understood by the bank’s risk teams and can be explained to board, senior management and business teams.
3. Control over external data (especially MEVs) that is fed into the solution which should not contain any ‘junk’ non-business specific data.

Figure 3: Economic Capital Value Pyramid for Successful Implementation



FI and country specific inputs

Nobody knows the bank's business like the bank itself. Banks have more information about the strength of its portfolios and of its strategic growth. RAROC framework and solution providers need to merge the know-how of the bank with the advisory services that enable the bank to unearth valuable results and insights. All this is not possible without the RAROC solution's ability to incorporate country and industry specific data points including the bank's own credit portfolio characteristics and experience. This will include data that reflects the economic environment and key sectors of the country. For example, for a country like Thailand, tourism sector data is a must, irrespective of the bank's key portfolios. This is because the tourism sector is highly correlated to Thailand's GDP which affects overall economic outlook.

Maintaining Core Business Strength

Most FIs know what their core sectors are. They have special expertise which can be harnessed into a competitive advantage over the rest of the industry. The RAROC framework and Credit VaR models should incorporate core business indices data as well as management judgement functions to cater the input and resulting output to optimise the bank's core strengths.

Simulating and Projecting Data

Overall, a Credit VaR solution should allow the banks to forecast the business and create multiple scenarios to:

- Identify key sectors that will gain from post-pandemic growth such as communications technology and allow the bank to pivot towards such business with key risk and performance indicators such as expected profitability, additional concentration risk and optimal pricing and buffers that may be required to venture sustainably.
- Simulate existing strategic vision and identify areas of potential risk post-pandemic and highlight areas of potential growth.
- Simulate growth strategy in more stress scenarios which are expected to increase in number and magnitude in coming years.

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A blueprint for a brighter future

Financial Institutions are struggling to respond to the vast uncertainties, lacking sufficient resources to perform group-wide impact assessments and to accurately forecast the impact of the economic shock to business profitability, capital adequacy, and risk.

FIs seeking to sharpen their policies and gain competitive advantage need to look beyond the 'ball-park' type approach of regulatory capital and gain deeper insights and more meaningful information for business decisions.

Building a risk management culture in the bank based on an ECap framework which optimizes, capital allocation based on more accurate and holistic measurement of credit risk vis-à-vis the risk appetite of the FI will enable the bank to set the tone of business for post-pandemic growth in a more agile, optimized and sustainable manner.

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