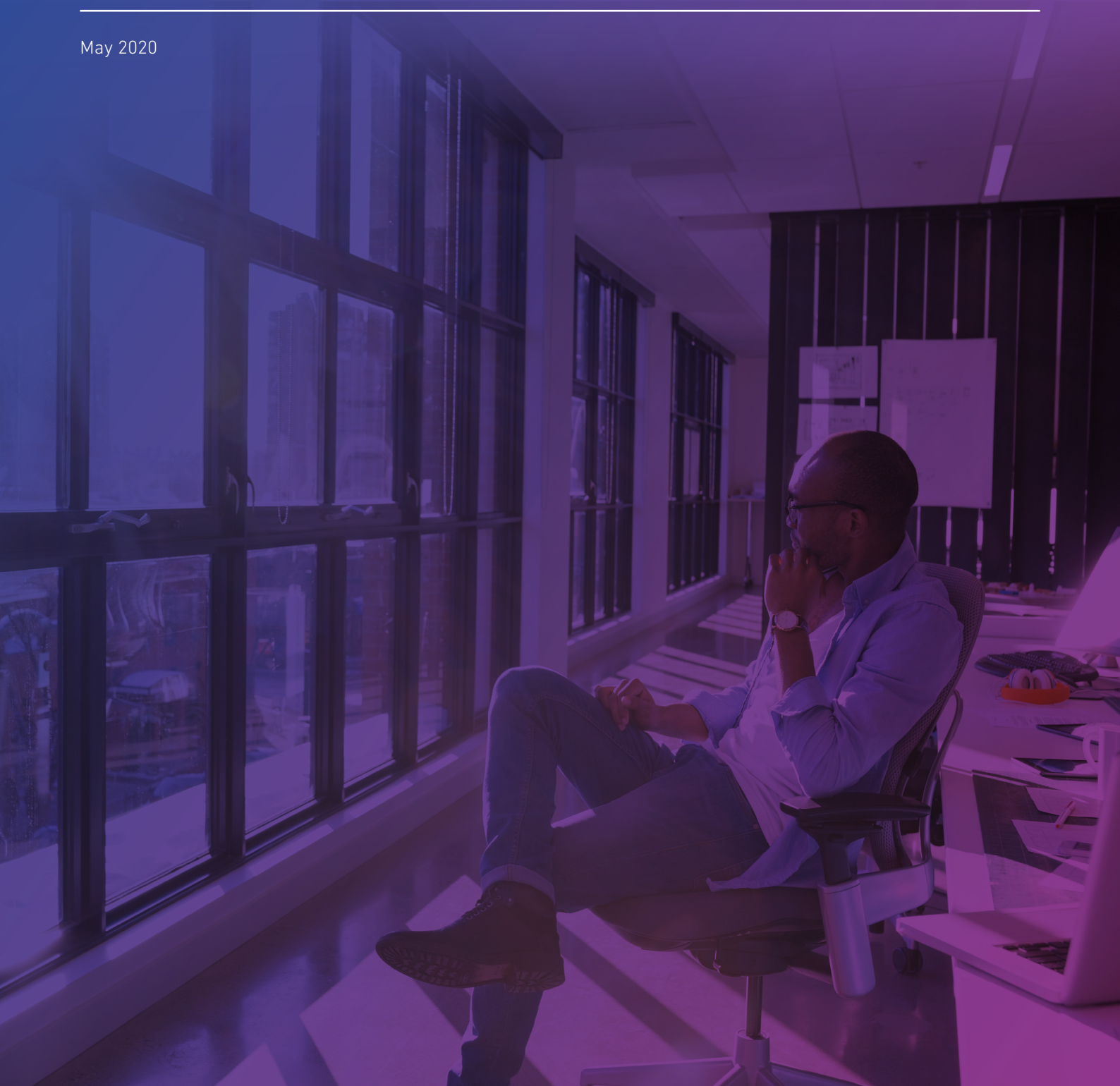


# Signal in the noise

Analytics in the times of COVID-19

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May 2020



# Signal in the noise

Consumer finance businesses in today's world use a variety of analytical models and machine learning algorithms to classify and decide the right actions to take on their customers. The global financial crisis (GFC) has shown us that the models, algos and action matrices change significantly during these 'black swan' events. We are clearly going through another such event now. Understanding the quantitative models, we use and re-calibrating them is a critical activity to undertake during this time. These models have become so deeply embedded in our businesses over a period, that understanding the impact new data has on them, and indeed knowing the interplay between the models used, is likely to be one of the easiest misses for consumer businesses in this period. The impact of wrong inferences or misdirected action gets amplified over a large population and could have clearly unintended consequences. Another key dimension of the problem is that these models are built for a longer-term prediction time frame and crises typically require shorter term view to direct action. We will, over this article, be discussing some of the key things to keep in mind and work on in dealing with consumer data models and algorithms through an inflection point, like the current COVID-19 crisis.

For example, let's take something as specific as a credit card application monitoring process. Typically, this will tend to get reviewed every month in a typical financial organization, with perhaps a more detailed quarterly review. The recommendation would be to increase the frequency to perhaps a fortnightly review for a period till the 'through the door' population stabilizes. This will enable a greater understanding of incoming consumer application profiles over this period. Trending this data to see changes in key characteristics, like demographics and behaviors, would be an ideal next step. This will help us make sense of the movement in key characteristics. During the global financial crisis (GFC) for instance, a trended analysis across multiple markets revealed that, while credit applications were passing the scorecard cut offs, there was a clear migration of volumes to lower credit score bands. Additional analysis highlighted a greater leverage within the lower score bands, leading to higher delinquencies due to the additional stress. Furthermore, for a period of over six months, the incoming population was going through changes reflecting the physical sourcing channels adjusting to markets. A simple additional step, that added a lot of value, was having a dialogue with the sourcing channels to get more context on the happenings on the ground. The efficacy of these basic steps cannot be over-stressed.

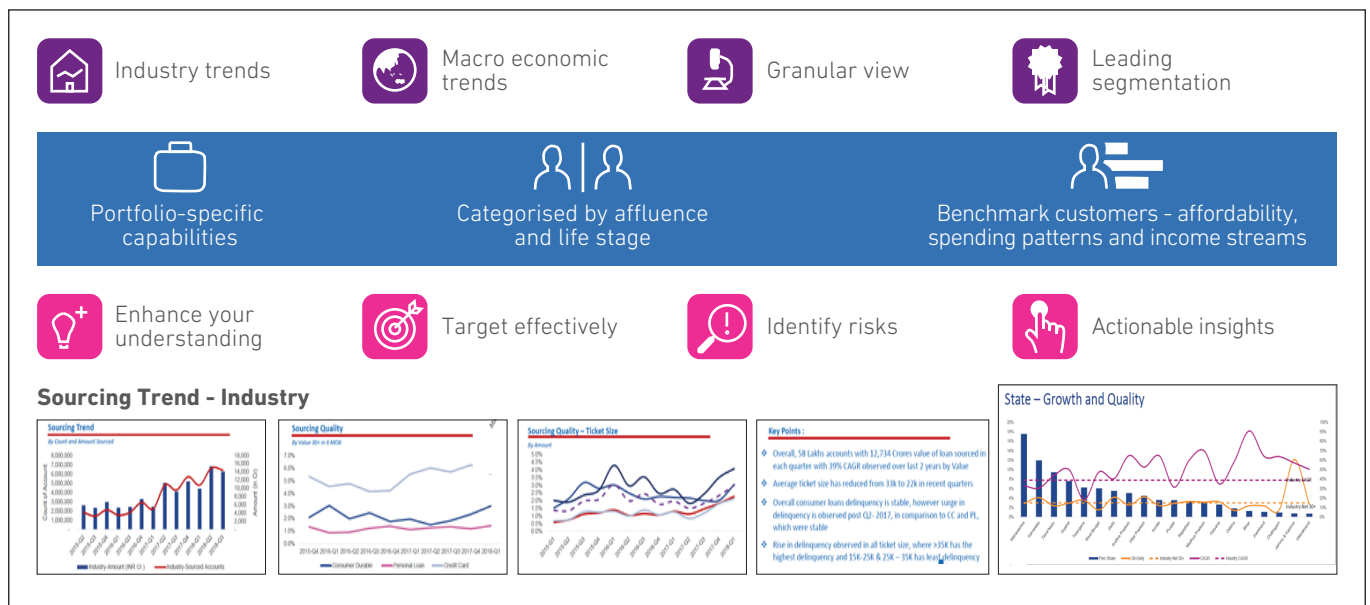
## The basics – review rigor and frequency

The starting point for this revisit is just reestablishing the rhythm and rigor of regular review of the reports in place, for various quantitative models across the business. The reality is that these processes lose their focus over normal periods and need to be revitalized to handle the changes in incoming trends. A simple start to this would be to set up more frequent than normal reviews and focusing on specific sections of regular reports to look at trended data.

## Industry Trends tracking

Tracking industry trends is useful even in normal periods, it becomes even more important in a such times as now. Typically, it is useful to track industry data on portfolio trends and segments where the signs of early stress are visible. This is work that can be undertaken with the bureau

**Exhibit 1: Industry insights tracking using Product and Sector Specific insights**



or in collaboration with other industry players. This will bring an outside in perspective on the relative position of the organization's portfolio vs the industry. It is useful to look at both portfolio performance as well as consumer acquisition data for these comparisons.

### Macro-economic correlation for top-down analysis

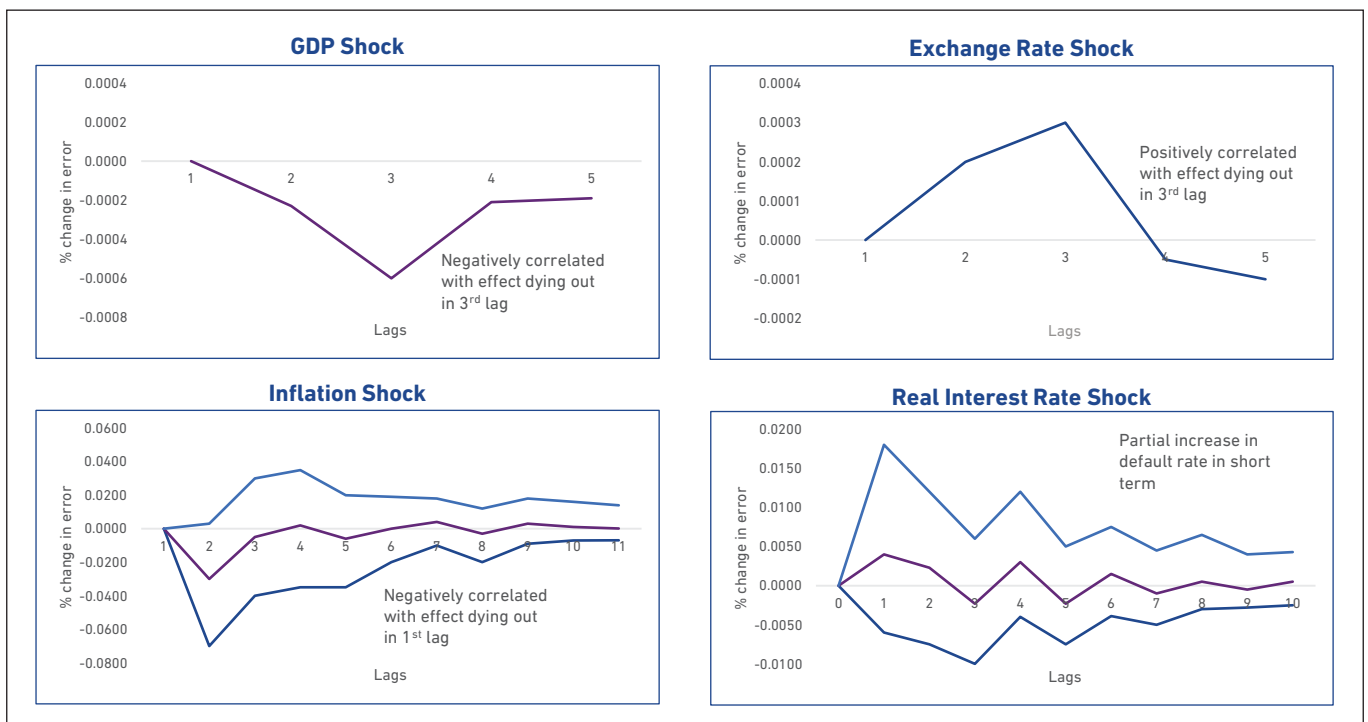
Even a major economic event will have a differential impact across customer and business segments. This is a good time to undertake an internal or assisted review of the macroeconomic impact of the crisis to best correlate external impact and internal portfolio. The analysis needs to be directed to understanding either segments of the population or micro geographies that are more significantly impacted than others to allow this insight to feed into organizational decisions.

It is important to understand that this impact could shift over the period of recession so the best analysis is one that can we perform repeatedly, over the period to see

trends and identify the changes. In this context, it is important that this external analysis is not a black box but be understood by analysts within the organization so that further changes can be tracked.

Techniques like impulse response analysis, which employ vector auto-regressive models, can be used to understand the impact of big changes in one or more variables (or shocks) overtime to other variables in large connected and composite systems. Models can be built to encapsulate the working of the system, with lagged values of the dependent variable, as well as current and lagged values of the exogenous variables, which are subject to the shock. The analysis then tracks the evolution of a model in reaction to a shock or change in one or more variables. With current computing capabilities, we can extend the scope of the 'system' definition all the way to consumer segment behavior. This will also allow, for instance, the modeling of policy stimulus on a consumer portfolio, which is becoming a big part of the global systemic response to recessionary phases.

**Exhibit 2:** Sample impulse response plots for key parameters



## Signal in the noise

### Additional data for greater insight

Consumer insight is of great value to an organization during a period of recession. Business volumes conceal bad decisions over a good period but in times of recession times and through defensive strategies, additional information is of great value. Hence, this may be a good time for organizations to look at additional data sources that can provide more information about customers (read my article: Data, Data everywhere). It would be ideal to focus on orthogonal data sources or data sources that can tell you something your internal data cannot. This would also be a good time to think of data collaboration projects across the industry, where there is visible complementarity of information value of internal data. Data collaboration has been slow in the consumer industry for want of clear value benchmarks. This is a time to undertake this exercise collaboratively, with a view to helping each other through the process. For instance, we would contemplate an active collaboration between complementary industries, such as online retailing and a bank, for a data barter to offer each other value through this period without necessarily monetary value associated with the data flows.

### Directional scores for finer profiling, better segmentation

Typical consumer credit scores or bureau scores tend to be predictions over longer time windows, typically about 12 months. This is suited for a banks' regulatory requirements on economic capital calculations and aligned to regular times. At times of recession there will be a need for more active customer management actions to control portfolio risk, handle customer requests while still growing your existing

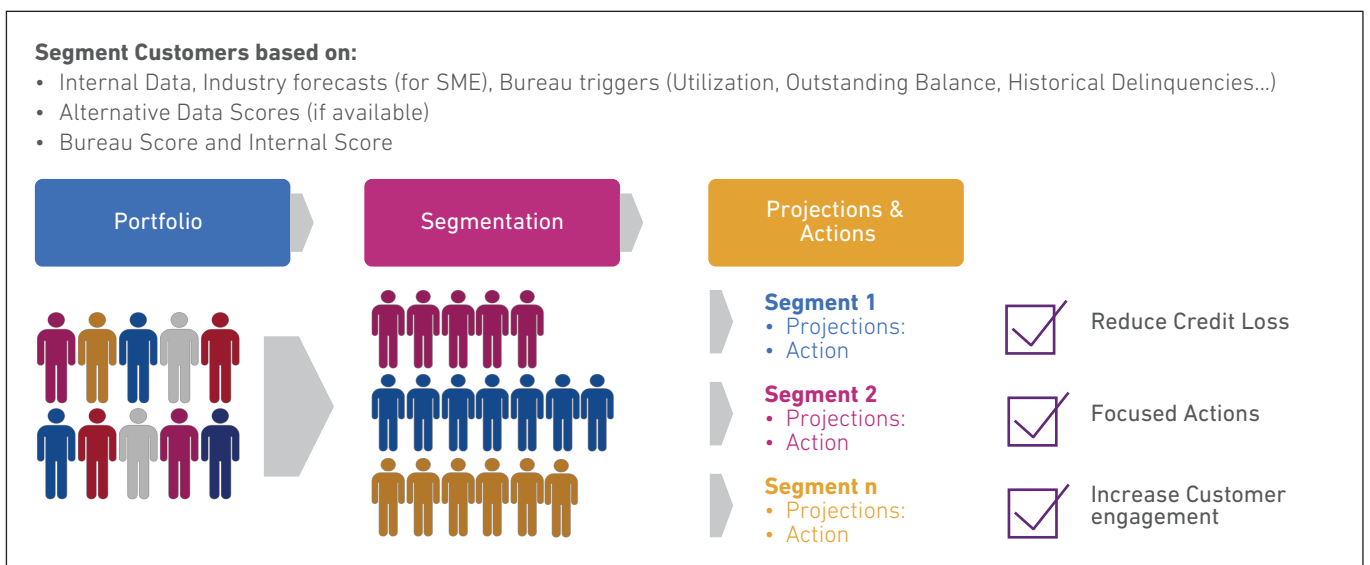
customer exposure. It is a good practice to have shorter tenure performance profiles. The regular scores can then be typically used in conjunction with these shorter window scores to fine-tune consumer segment treatment. With modern methods like ML, it takes little time to develop these, but they add a lot of value in driving defensive strategies on customer segments.

It would be a good practice to develop a set of these models, to add another dimension to the decision matrix used to action against a consumer portfolio. The simplest way to think of this would be to look at these additional models creating finer segmentation, by dissecting consumers in different short tenure performance bands within the same longer tenure performance band, to allow for very directed action.

This finer customer segmentation, especially at the lower income consumer base, is particularly relevant in periods of stress. Multiple markets in APac have an income pyramid, where the lower income base is the largest in number and typically subject to highest stress during recession. Fine tuning treatment for this base by segmenting better is the right step to ensure that broad-brush approaches don't end up losing the organization's consumer segments that have been acquired at a significant cost and will grow to significance with per capita GDP growth in these economies.

Additional attributes that assist in the finer segmentation as well as action decisions such as income scores, leverage, stability scores, network scores and collection scores, that may be offered by credit bureaus or internally developed, are also of great value through this phase and worth focusing on.

**Exhibit 3:** Use case of portfolio monitoring and segmented actions



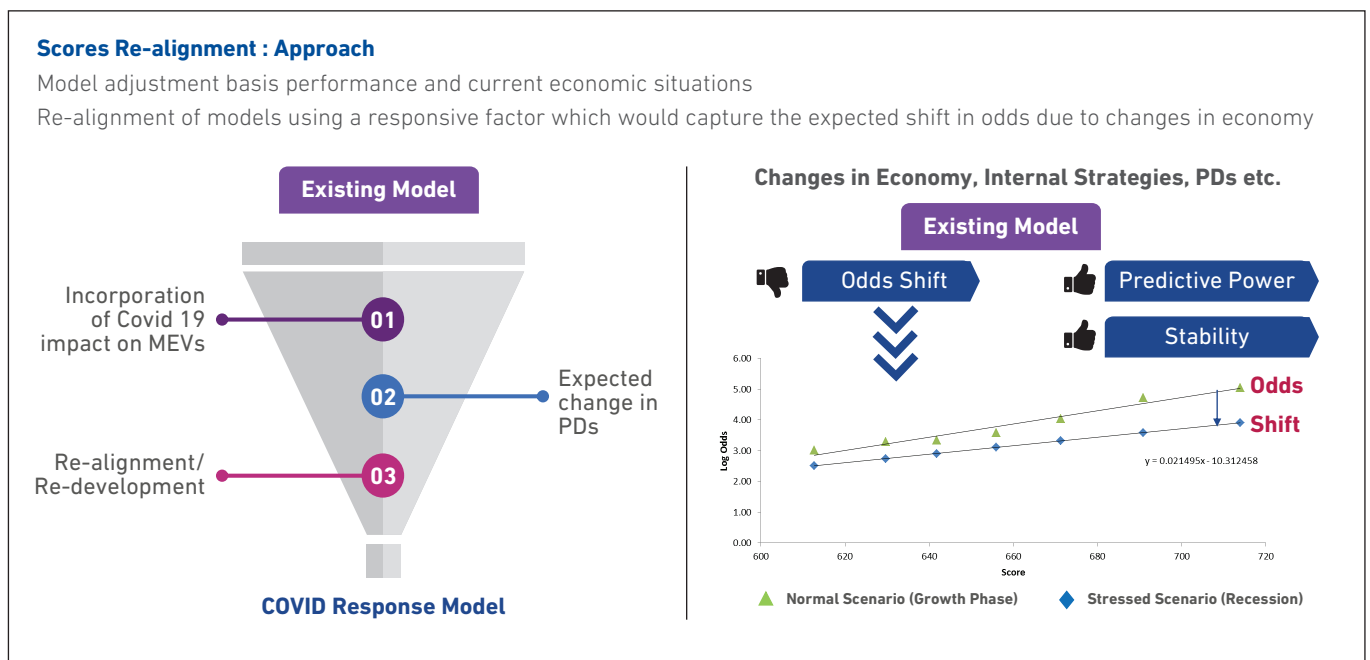
## Scorecard re-calibrations, cut-off, and strategy changes

An obvious step in the overall process of adjusting models to the environment changes is looking at score cut-offs, strategy revisits and an eventual redevelopment. An immediate and aggressive revisit of the scorecard cut-offs for existing products is a clear first step. There is an immediate and high-payoff opportunity in revisiting all strategies in decisioning. In line with the earlier observations,

looking at focus segments to adjust to additional insights and complementing this with required strategy changes, makes immediate sense.

A redevelopment of the scorecards does not make immediate sense until the incoming population stabilizes. However, given the speed of ML led score development processes, looking at a 'shadow' scorecard adjusting to incoming data is a good idea. This could give insights to adjust the strategy pending adoption of the new scorecards.

### Exhibit 4: Data Driven Model Adjustment



Some of these re-calibrations could also be looked at in the immediate horizon for areas like fraud risk, where faster transmission from data to model is possible and the market agility is also typically higher through this period.

## Simulation and scenario planning

Simulation and scenario planning add tremendous value through a recession as they strongly support defensive strategies. With ML and synthetic data, the ability to simulate and scenario plan has grown multi-fold over the last years. In addition, there is the opportunity to look at simulation as a supervised learning problem in volatile times when we could look at a credit modeling as a stochastic

system, where decisions are made based on real-time short-term performance information. Coupled with the ability of the ML models to improve process understanding by model or scenario iterations, there is a scope to strongly use ML in this space through the coming recession. This methodology is also valuable in estimating provisioning needed to account for any changes in portfolio performance as well as in capital estimation. The point to note here will be that the underlying framework for scenario planning should be similar to the one used for scorecard re-calibration in order to ensure consistency in views across all action areas as well as in making the process agile to any changes seen in the external environment. The following use cases on regulatory models

# Signal in the noise

## Exhibit 5: Recalibration of capital models and relook capital impact

To address the impact COVID-19 the issues, Experian will use a consulting-led approach to develop a framework best suited for the institution. The high-level approach will look into the following:

**Validation of existing models** to assess gaps in capturing the Covid-19 impact

- IFRS 9 ECL model components
- Revisiting RWA calculations
- Additional stress test scenarios specific to COVID 19
- Review of country-specific or regionspecific **macroeconomic factors** significantly affected by the pandemic
- **Model fine-tuning** based on countryspecific or region-specific macroeconomic factors



- Review of **local monetary and fiscal policies** that provide credit and regulatory reliefs
- Review of **global financial and accounting standards** in response to significant macroeconomic or market conditions
- Qualitative assessment of existing **bank policies and post-model overlays**
- Recommendation for **model and post-model adjustments** incorporating internal, local, and global policies

## Actions

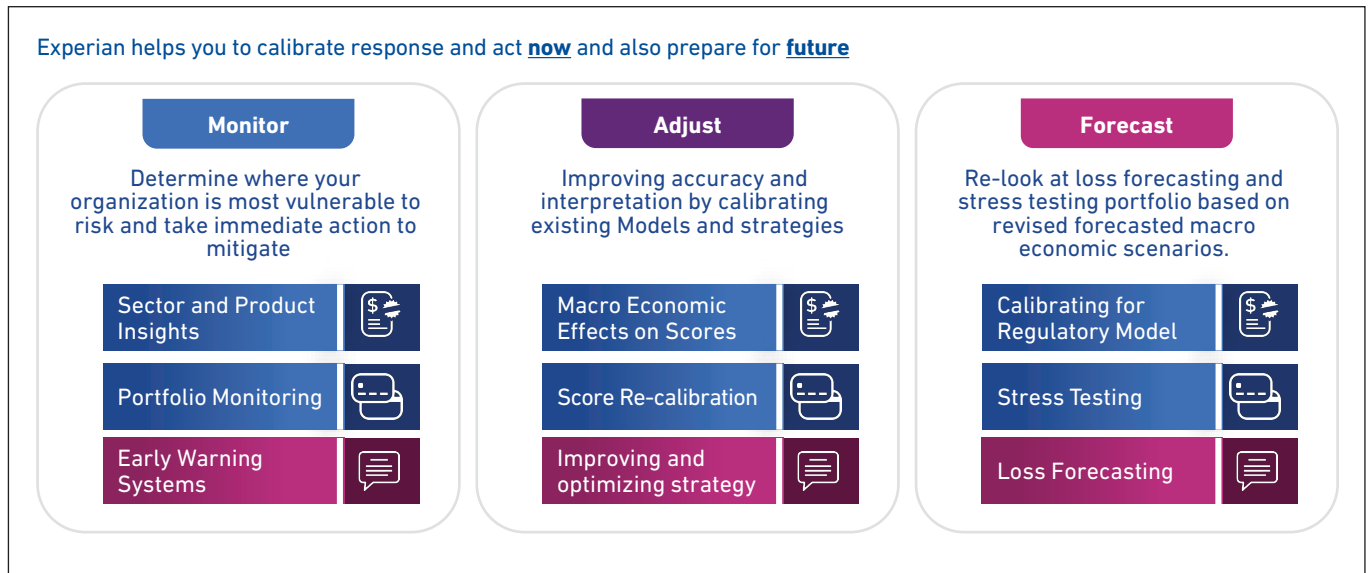
The last but the most important thing to be called out is something that historically has been more of an art than a science – the application of the right treatment or action against each analytical scenario drawn from the application of any of the above techniques. There is a distinct possibility to move this art more to a science, with the recording of outcomes against treatments, and treating this area as an optimization problem over a period. With resources likely to be more constrained during the recessionary period and as losses are likely to rise, the need to make optimized decisions on your existing customer base through areas such as collections, limit management & cross-sell/up sell may be very valuable, while continuing to forecast and build

the new customer base. In the immediate future, this is likely to be the best use of management bandwidth by closely looking at incoming data and tracking it to outcomes as indicated earlier.

The last recession gave us 'quantitative easing' as a tool in our arsenal to handle the down-cycle. With changes in technology allowing use of more data, faster processing of information and the progress we have made in ML over the last year, the coming recession would be the litmus test of 'lift' we can get through the combined impact of all of this applied at pace to the consumer space over our traditional response. It could well be the difference in the way we could react to a downturn and the speed at which we could recover from it this time around and for the ones to come.

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## How can Experian Help...

**Exhibit 6:** Risk Calibration and Forecasting Framework: Monitor, Adjust and Forecast

We at Experian can help you with our Risk Calibration and Forecasting Framework to address the themes highlighted in this white paper. Our framework will help you act now and also prepare for the future.

## For more details :

If you would like to discuss this White paper and get details of our Risk Calibration and Forecasting framework, you can reach out to

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