The Aftermath of the COVID-19 Crises: Establishing Resilience with Your Risk Assessment Decisions

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Managing through this Black Swan Event!
Execute Your Path of Resilience

**Short-term**

**Regroup**
Understand impact of current events, and available data & tool set to address; triage strategy treatments

**Medium-term**

**Strategize**
Differentiate recovery patterns, use high frequency data to enhance decision tools, define treatments for new segments

**Long-term**

**Growth**
Be agile in responding to changing patterns. Capture forecast for pre-covid19 baseline and Covid 19 results to capture Covid 19 impact.

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**Strategize to meet client, business and regulatory trade offs**

- Pre-Covid19 behavior (baseline)
- Segment based on trends that indicate recovery path
- Integrate with decision and communication tools
- Simulate scenario analysis to forecast and manage expected recovery
- Comprehensive portfolio/consortium sensitivities
- Evolve responsive measures building for future resiliency
Model misbehaviour: coronavirus confounds bank risk systems

LONDON (Reuters) - The novel coronavirus has upended how banks manage lending risk, with decades of data rendered moot by a once-in-a-lifetime mix of global economic shutdowns, unprecedented government support and an uncertain path to recovery.

- Reuters Business News June 22, 2020
Risk Models will Continue to Rank Order Risk

- Scores will adjust to the ebb and flow of recovering economic journey.
- Payment Holiday actions are masking short horizon risk view.
- Odds will change across the spectrum.
Score resiliency is demonstrated by the fact it continues to rank order, but odds can change significantly. And take a bit of time to a recover to pre-recession performance state.

These measures were assessed looking backwards, suggesting there is possibly exogenous data that might be indicative of changing performance, real time.
Auto Loan Odds to Score Returned to Pre-Recession Levels by 2011

Performance deterioration was not as profound for the auto industry in this cycle, yet it still took 6 years for performance to get back to what it was in 2005 (2011 is sitting on top of 2005 values). These same measures do vary across different regions and segments within a population and will do so again.
Natural Disaster Related Performance Timeline

Late Aug 2017: Harvey Makes Landfall

~Nov 2017: Payment Stresses Largely Reflected in Credit File

Q1 2018: Delinquency rate in severely impacted counties peaks

90 days of forbearance delayed bureau performance changes at least 4-6 months..

Lessons learned to bring to this crisis

• During the last financial crisis
  • Full impact understanding required retrospective analysis
  • CB based research was helpful as an overall diagnostic/benchmark but, with lagged information
  • Crisis exposed the limitation of analytic approaches – 1) lack of data that explains the motivation behind behaviors and 2) too little focus on the differences in current times versus historical cycles 3) recent observed data needed in time of crisis to predict future behavior

• FICO Priority Now
  • Engage with clients on urgent priorities now, and on-going to the next steady state.
  • Adjusting analytics to look forward to navigate this big change
  • Focus on understanding consumers in this new context
  • Review contextual knowledge beyond the data we typically use as our “lens”
Imagine all of these individuals have a FICO® Score of 680

They each took their own unique credit journey to get there.

Some are resilient to an economic downturn.

While others are more sensitive to a downturn.

R&D Finding: Even within narrow FICO® Score bands, a range of “economic stress resilience” can be observed.
FICO® Resilience Index

Designed to differentiate levels of “economic stress resilience” within narrow FICO® Score bands

• Rank-orders consumers based on their sensitivity to economic stress

• Helps lenders identify “latent” credit risk within their portfolios that could manifest during periods of economic disruption

• Designed for use in conjunction with the FICO® Score (non-correlated)

• Score ranges from 1 to 99 (lower → more resilient; higher → more sensitive)
### FICO® Resilience Index Differentiates Resilient vs. Sensitive Consumers

<table>
<thead>
<tr>
<th></th>
<th>All Consumers @ FICO® Score 680</th>
<th>20% Most Sensitive @ FICO® Score 680</th>
<th>20% Most Resilient @ FICO® Score 680</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>90+ DPD Rate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal Economy</td>
<td>12.5%</td>
<td>14.0%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Great Recession</td>
<td>20.7%</td>
<td>29.3%</td>
<td>13.7%</td>
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</table>

Bad rates were 65% higher for consumers with a 680 FICO Score in the Great Recession.

For consumers in the top FRI quintile, the **bad rate was more than double** that in the normal economy.

In contrast, for consumers in the bottom FRI quintile, the bad rate was **only slightly higher**.
# Consumers Very Sensitive to Economic Stress Disproportionately Drive Losses

<table>
<thead>
<tr>
<th>FICO® Score 8 Band</th>
<th>Percent of Score Band That is &quot;Very Sensitive&quot; (FRI 70+)</th>
<th>Percent of All Trade Lines 90 Days past Due within Score Band Observed on &quot;Very Sensitive&quot; Consumers during 2007-2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>580-599</td>
<td>5.6%</td>
<td>19.1%</td>
</tr>
<tr>
<td>600-619</td>
<td>7.9%</td>
<td>25.5%</td>
</tr>
<tr>
<td>620-639</td>
<td>10.9%</td>
<td>32.2%</td>
</tr>
<tr>
<td>640-659</td>
<td>13.8%</td>
<td>38.1%</td>
</tr>
<tr>
<td>660-679</td>
<td>15.1%</td>
<td>40.0%</td>
</tr>
<tr>
<td>680-699</td>
<td>14.9%</td>
<td>38.6%</td>
</tr>
<tr>
<td>700-719</td>
<td>12.7%</td>
<td>32.6%</td>
</tr>
<tr>
<td>720-739</td>
<td>10.1%</td>
<td>28.1%</td>
</tr>
<tr>
<td>740-759</td>
<td>7.4%</td>
<td>21.6%</td>
</tr>
<tr>
<td><strong>Total Population</strong></td>
<td><strong>6.4%</strong></td>
<td><strong>23.2%</strong></td>
</tr>
</tbody>
</table>
FICO® Resilience Index Provides Additional Rank Ordering During Stressed Economy
Auto Originations, 2007-2009

Strong risk differentiation between Top and Bottom FRI Quintiles creates opportunity to refine lender strategies.
FICO® Resilience Index Provides Strong Additional Ranking in Stressed Economy

Strong risk differentiation between top and bottom FRI Quintiles creates opportunity to refine strategies.
Current challenges

• Payment holidays are masking short-term risk view, so can I trust my risk models?
• Need to understand better how customers are impacted by COVID-19 and will recover over different timelines.
• Introducing new sources of data can create operational hurdles when resources are already tight.
• Need to understand how the book of business will perform under best and worse case scenarios
• How do we capture our learnings and adapt our assumptions/strategies?
Broadening our lens into the consumers’ COVID-19 experience

- **Credit Bureau**
  - Historical credit behavior
  - Demographic @ consumer level

- **Credit/Debit Transactions**
  - Financial activities

- **DDA**
  - Income
  - Payments

- **Panel Survey**
  - Includes consumer outlook info
  - Demographic @ consumer level

- **Industry Data from Various Sources**
  - Demographic
  - Unemployment
  - Healthcare
  - Economic

High frequency data

Non-traditional data
Current challenges

Models developed on historical data don’t differentiate significant onset of economic change

“History doesn't repeat itself, but it often rhymes”

— Mark Twain

My risk models may still rank order risk, but will the odds to score relationship change?

How should those changes be incorporated in my decision strategies – quickly?

Now that the more urgent, tactical needs have been addressed, how do I understand and anticipate the downstream losses in my portfolio?
Current challenges

Augment and translate

Industry-wide Segmentation Scheme: COVID-19 Impact / Recovery

Customer Data

Current Risk Scores

Score Realignment Algorithm

Odds-to-score adjustment function

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External Data - examples

- Unemployment @ MSA level
- Industry
- Region
- Income
- Pre-COVID Risk Bands
COVID-19 Score Adjustment Methodology

Data Requirement and Output

Customer Data
- Risk Score
- Demographic Information (Zip Code, Industry, Income)
- Performance Data (Optional)
- Transaction Data (Optional)

Current Risk Scores

Score Realignment Algorithm

Updated Odds-to-Score Chart

Updated Decision Strategies using realigned Scores

Recovery Curves[3] that can be incorporated in a Loss

Industry-wide Segmentation Scheme: COVID-19 Impact / Recovery

Monitor and Adapt

External Data [2] - examples
- Unemployment @ MSA level
- Industry
- Region
- Income
- Pre-COVID Risk Bands

1. Customer Data
2. Odds-to-score adjustment function
3. Recovery Curves

[1] Customer data should include at least minimum Risk Score variable and zip code. Zip code is used to match to some of the external data.


[3] Simulation of Recovery Curves will require multiple scenario creation by tweaking the assumptions in the PD and odds-to-scores adjustment.
Illustration of bringing in COVID-19 insights

Customer Profile (December 2019)
- Industry: Food Services
- City: Pasadena, CA
- Behavior Score: 600

“High Impact Region and Industry” Segment Metrics
- Unemployment YoY increase: 40%
- Pre-COVID delinquency rate: 4%
- Payment holidays taken: 60%
- Discretionary spending YoY decrease: 80%

Customer Profile (April 2020)
- Industry: Food Services
- City: Pasadena, CA
- Behavior Score: 525

You provide summary data of what you know about your customer today, including the risk score and related expected odds.

FICO will apply the COVID-19 impact/recovery segmentation and work with you to incorporate your updated expectations of risk at the segment level.

FICO will deliver back to your data with the adjusted score values that reflects the updated expectation of performance odds given the current insight.

Adjusted score insight is now used in decision strategy changes such as:
- Acceleration from passive to aggressive collections
- Movement to reposssession
- Improved pricing terms
- Sale of a used vehicle versus new
FICO Xpress Insights Scenario Analysis Tool

Welcome
This is an application for calculating the provisions based on multiple scenarios. It can execute PD, EAD, LGD, EL, and Provisioning reports to examine the forecast. A rich set of reports and graphs provides flexible reporting and model building.

Multiple scenario assessment
Performance Simulation

• Enables you to
  • Explore variety of measures for multiple scenarios
  • Compare scenario performance versus baseline to view variations and core drivers
  • Efficiently facilitate stakeholder discussion

• Benefit of using a tool to do that versus your BAU process
  • Accommodates analyst and business user with user friendly UI
  • Efficient use of time and resource
  • Adaptability to new information with visual performance assessment
  • Rigorous application of assumptions and testing
FICO Xpress Insights Scenario Analysis Tool

Data, Model & Decision Analysis
- Single point of truth for data
- Data & Model
- Profiling
- Scenario Impact Analysis

Integration & APIs
- Integrate 3rd Party Modelling Products
- Wide Range of Data Connectors
- Access to Optimization Solvers

Decision Support
- What-if analysis
- Side-by-side comparison
- Built-in Scenario Management
- Standardized KPI evaluation & reporting

Simulation & Stress Testing
- Basic to Advanced Simulation of baseline & challenger decisions
- Easily apply stress factors & change assumptions
- Sensitivity Analysis
- Performance forecasting
Thank You!

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