MOODY'S



COVID-19 Impacts and Key Drivers to Auto and RV Expected Losses

Jui-Chuan Wu (Amy), Director David Fieldhouse, Director

July 9, 2020

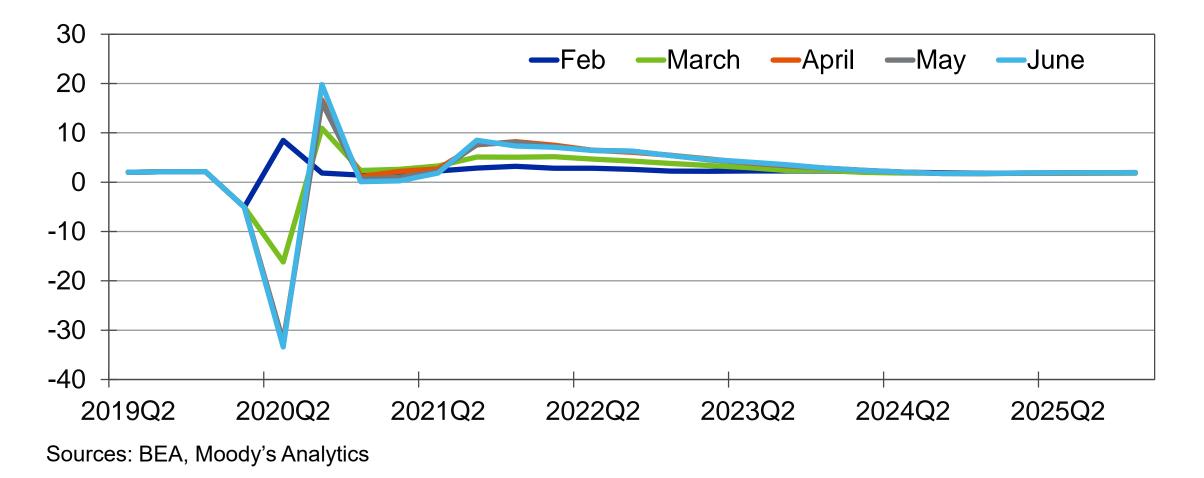
Agenda

- 1. How COVID-19 Will Impact an Auto and RV Portfolio and Their CECL Allowances
- 2. Which Accounts Are More Sensitive to the Economy and Drive Losses
- 3. Methods to Analyze the Impact of Payment Accommodations on an Auto Portfolio



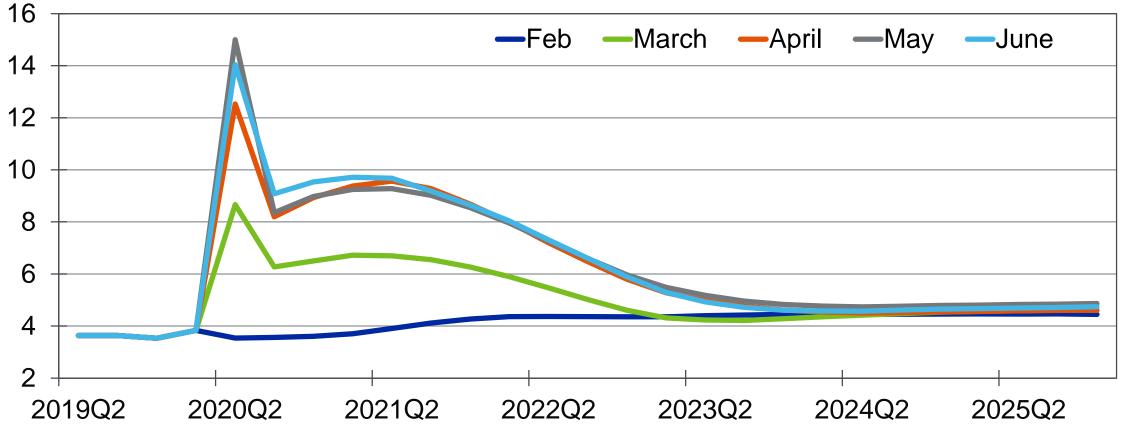
How COVID-19 Will Impact an Auto and RV Portfolio and Their CECL Allowances

Pre and Post COVID-19 Baseline Macro Outlook Changes U.S. real GDP growth, SAAR (%)



Pre and Post COVID-19 Baseline Macro Outlook Changes

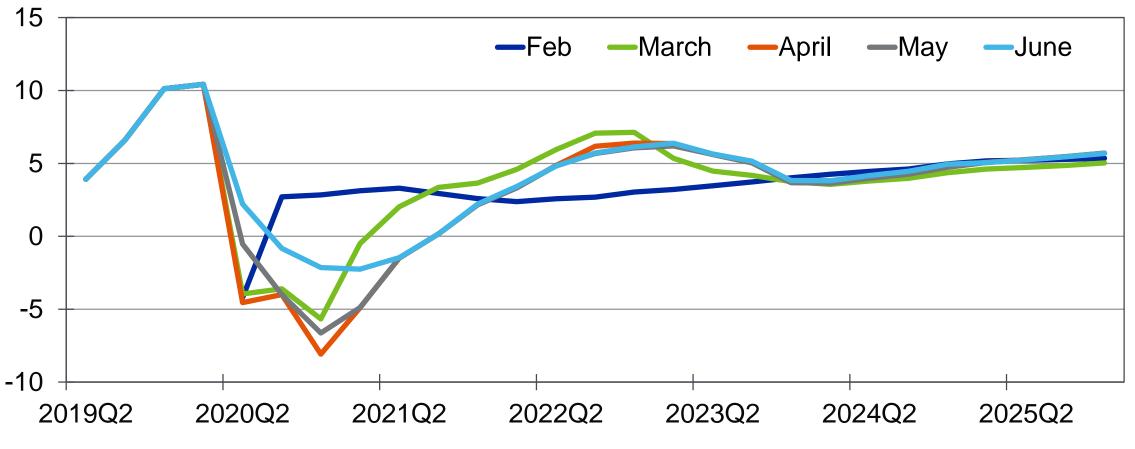
U.S. unemployment rate (%)



Sources: BLS, Moody's Analytics

Pre and Post COVID-19 Baseline Macro Outlook Changes

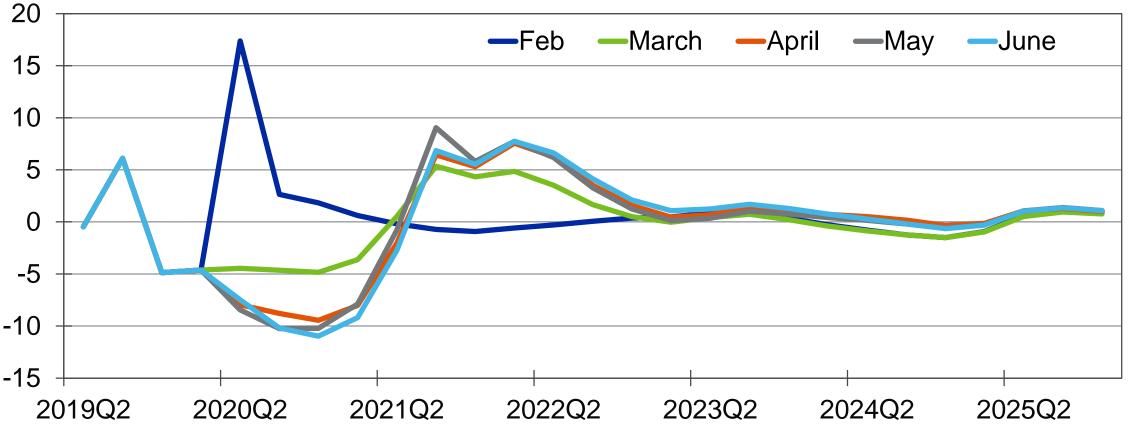
U.S. home price growth, SAAR (%)



Sources: NAR, Moody's Analytics

Pre and Post COVID-19 Baseline Macro Outlook Changes

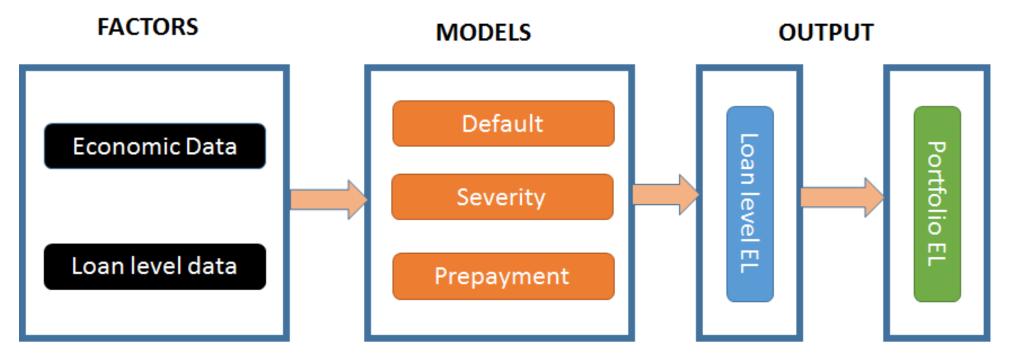
U.S. Used Car Index growth, SAAR (%)



Sources: BLS, Moody's Analytics

Auto Portfolio Analyzer - How It Works

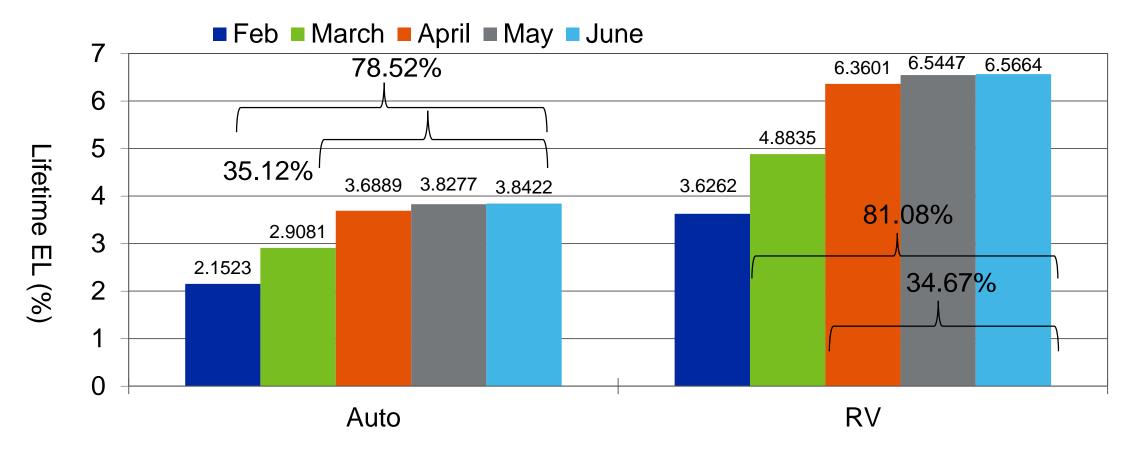
APA models default, prepayment, and severity for each loan, taking as input information on the borrower, loan, make of car, and local & national macro-economic factors.



Source: Moody's Analytics

CECL Lifetime Expected Losses Change Since COVID-19

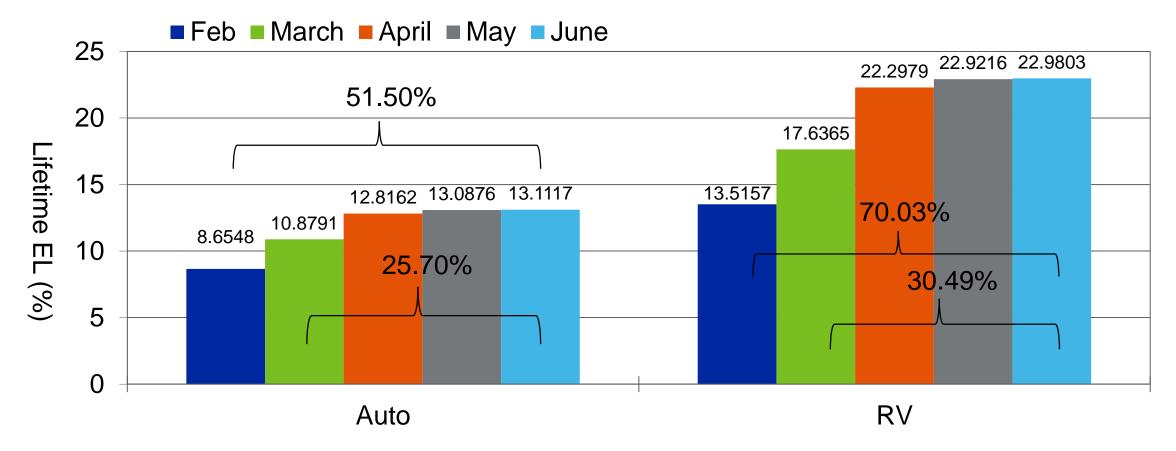
January, 2020 0.5 million Auto Loan vs. 7,000 RV randomly sample portfolio March Run Results





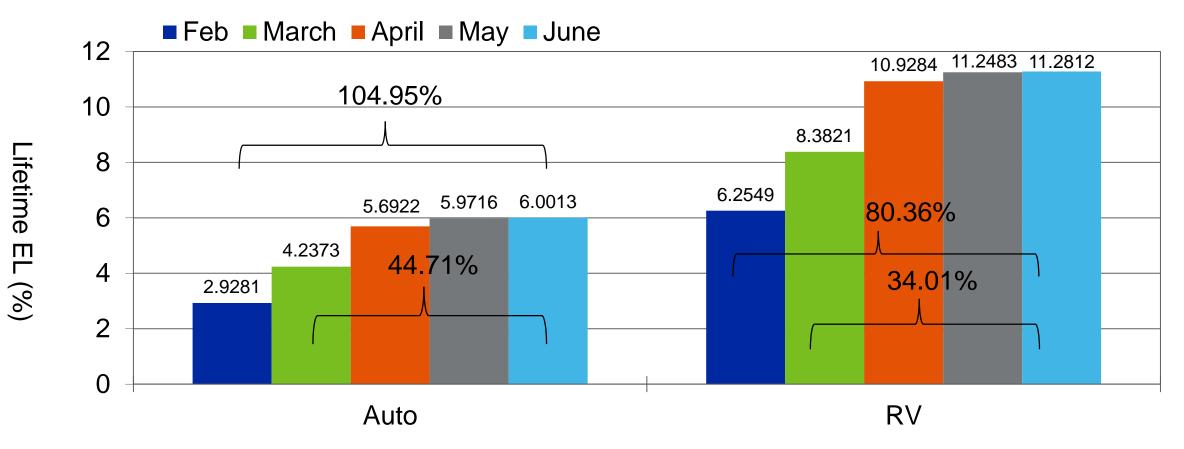
Which Accounts Are More Sensitive to the Economy and Drive Losses Low Vantage Score <= 600 Loans Are the Least Sensitive to Macro Shocks

CECL Lifetime Expected Losses



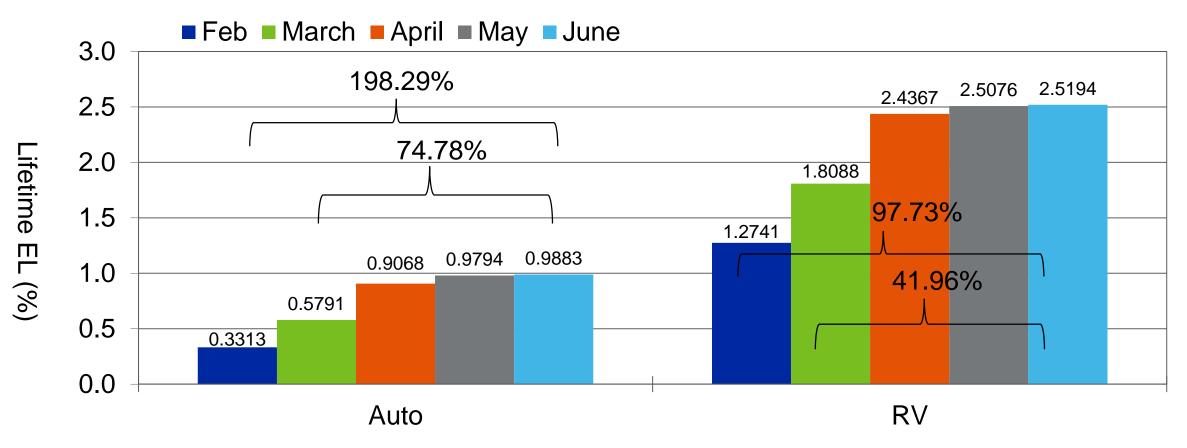
Medium Vantage Score (600-700]

CECL Lifetime Expected Losses



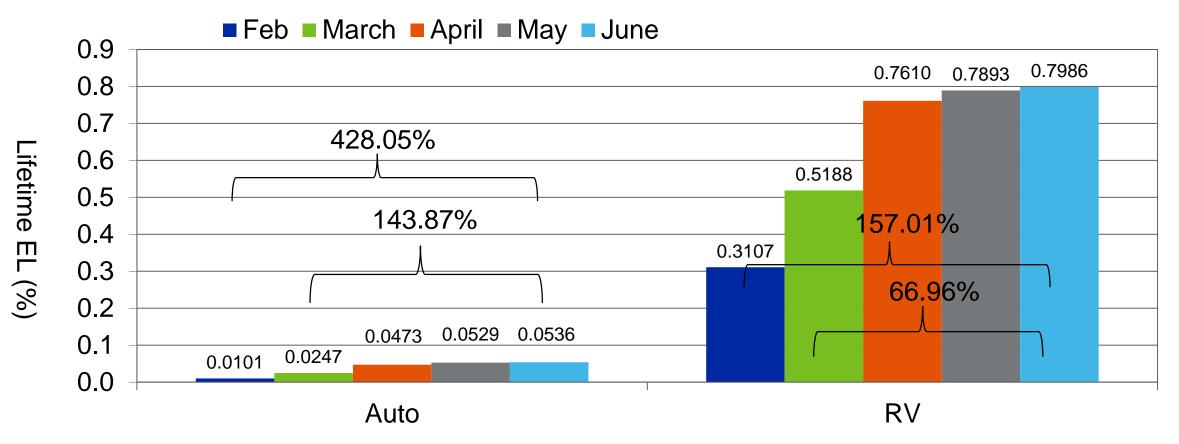
Medium Vantage Score (700-800]

CECL Lifetime Expected Losses



High Vantage Score > 800 Loans Are the Most Sensitive to Macro Shocks

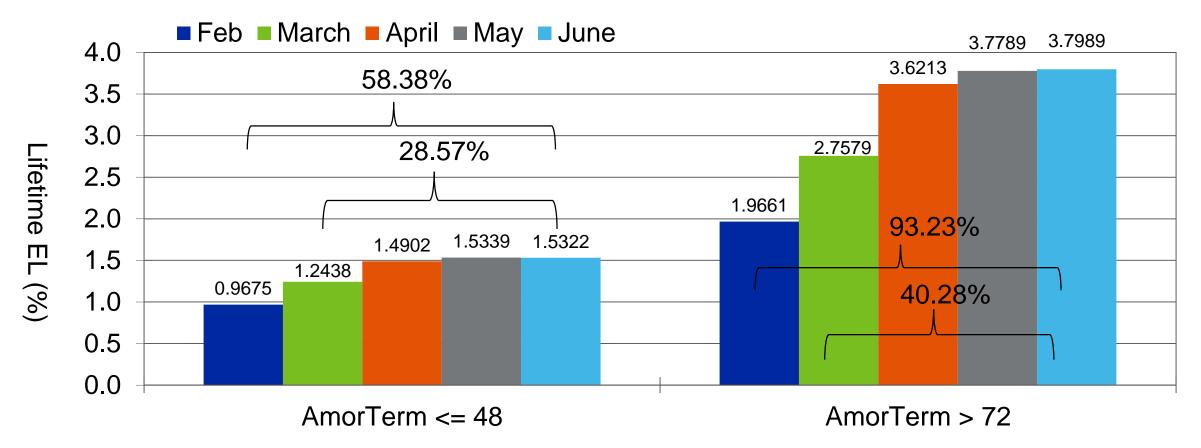
CECL Lifetime Expected Losses



Sources: Moody's Analytics, Auto Portfolio Analyzer

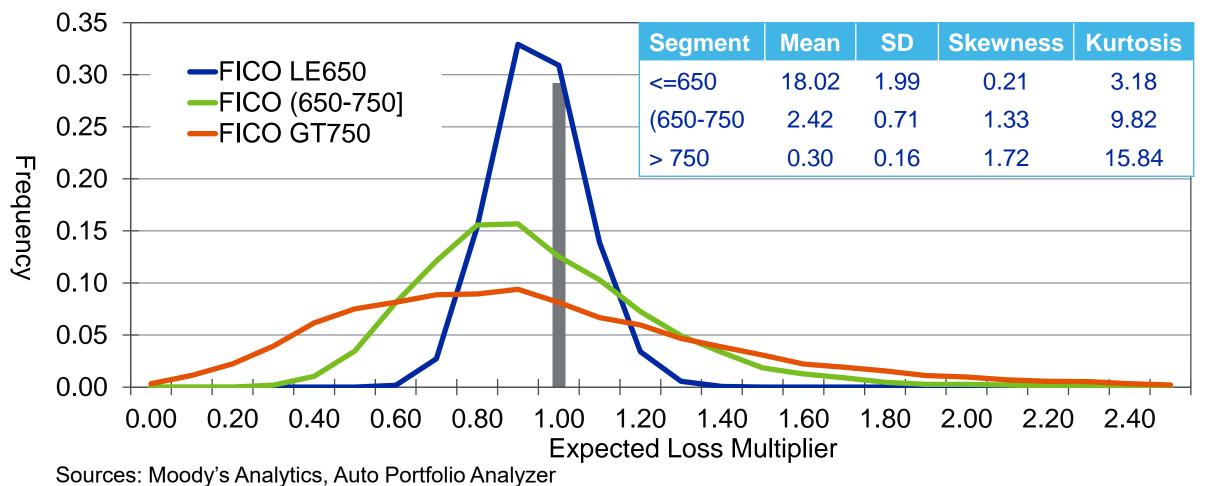
Loans With Longer Loan Terms Are More Sensitive to Macro Shocks

CECL Lifetime Expected Losses for Auto Loans

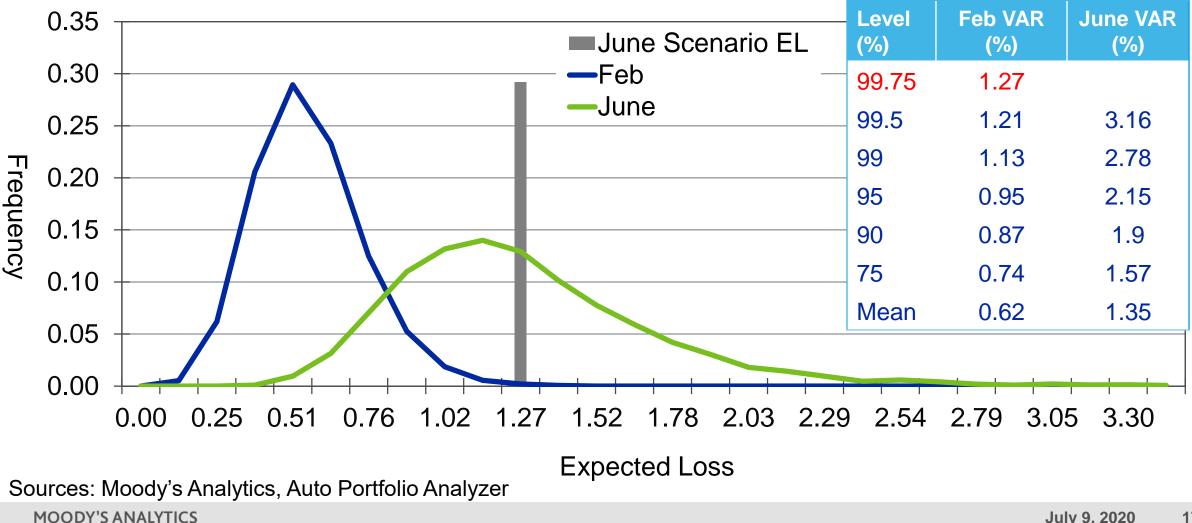


Auto Loan – High Vantage Score Is More Sensitive to Macro Shock

June Baseline Loss Distribution From Monte Carlo Simulation Results



Auto Loan – Unthinkable Unexpected Losses Due to COVID-19

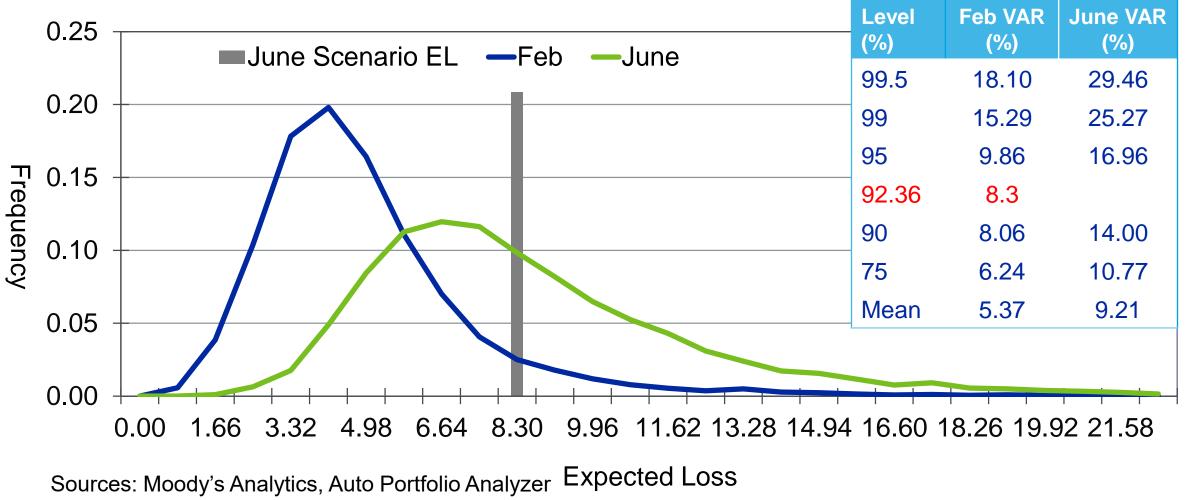


Feb vs. June Baseline Loss Distribution From Monte Carlo Simulation Results

July 9, 2020 17

RV – Unexpected Losses Due to COVID-19

Feb vs. June Baseline Loss Distribution From Monte Carlo Simulation Results

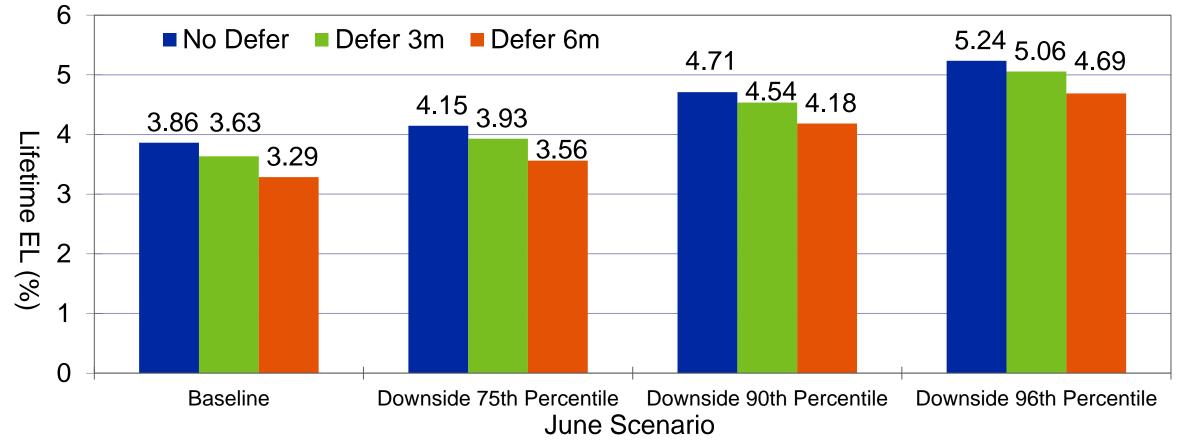




Methods to Analyze the Impact of Payment Accommodations on an Auto Portfolio

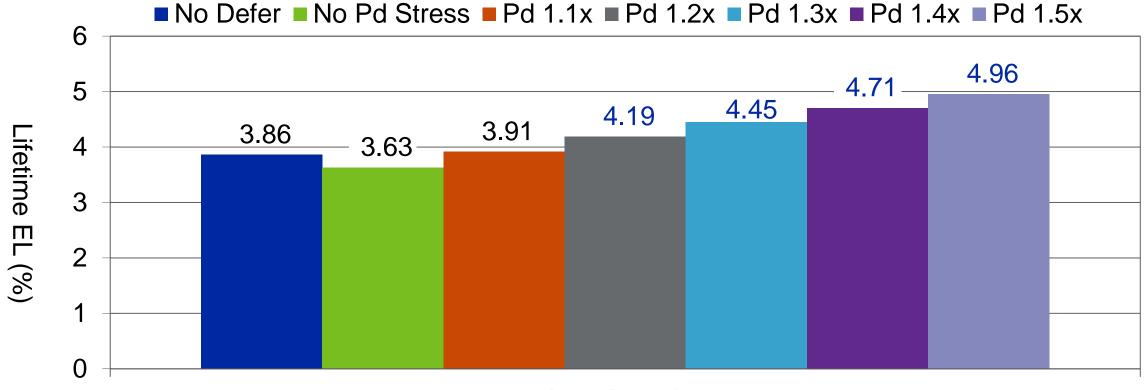
Payment Deferment Impacts Highly Lies on the Macro Assumption

V, U or W-Shaped Recovery



How to Capture the Implied Higher Risk of a Deferred Payment Loan From the One Without

Stress Probability of Default – 3 months deferred payments

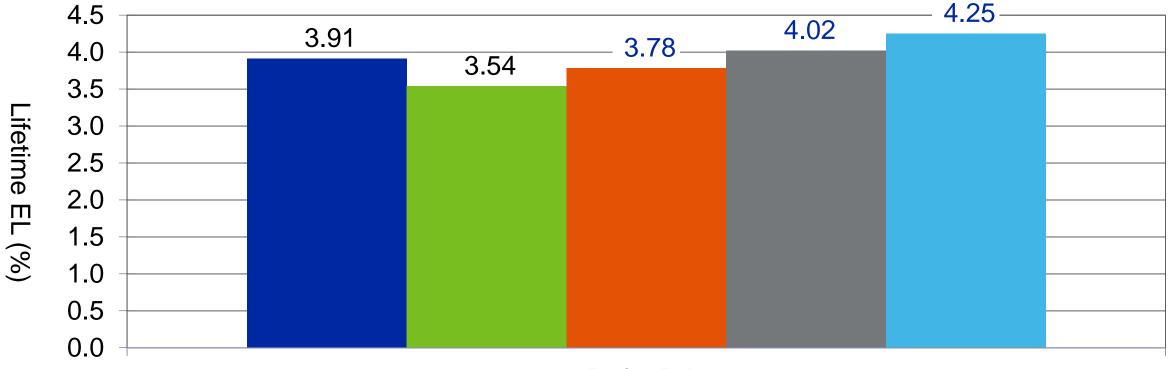


June Baseline

Longer Deferred Plan Needs More Stress

Borrowers who need longer deferred terms are likely under more stress and with higher default risks.

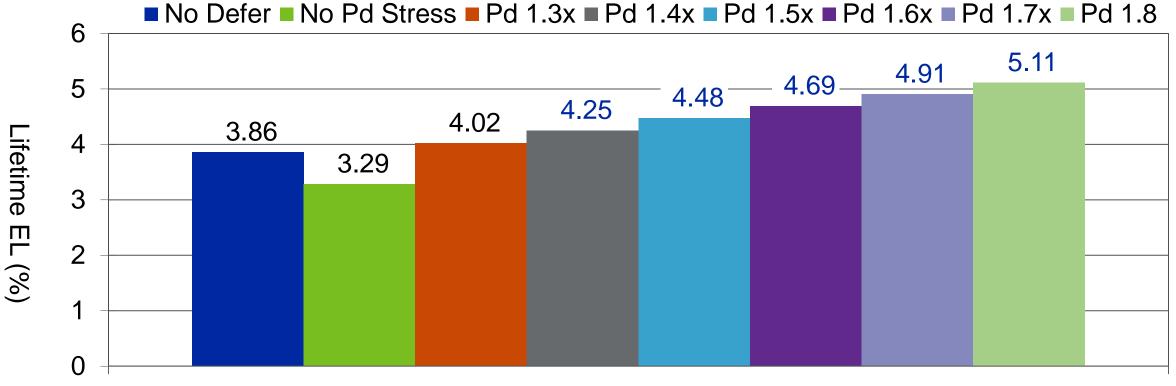
■ 3m Pd 1.1x ■ 6m Pd 1.1x ■ 6m Pd 1.2x ■ 6m Pd 1.3x ■ 6m Pd 1.4x



3m Defer Pd 1.1x June Baseline

An Alternative Way to Set a Possible Expected Losses Range than Stressing Scenarios

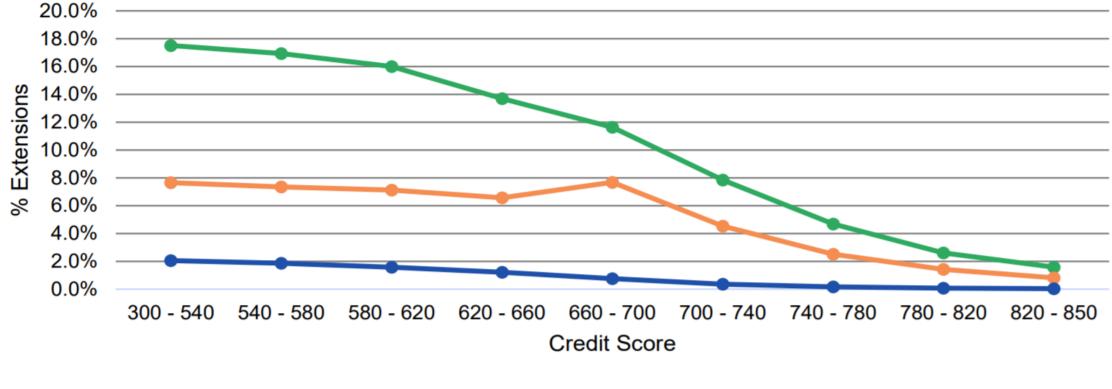
Stress Probability of Default – 6 months deferred payments



June Baseline

Loan Extension Has Increased Across All Borrowers

Extension percentage by credit score



----- Apr 2020 ------ Mar 2020 ------ Feb 2020

Sources: EDGAR/Moody's Analytics DataViewer

Easy to Back Test and Calibrate to Different Portfolios

Portfolio Analyzer	US Autos Options
Calibration LGD Calibration Settings	
Calibration Data Files	Horizon
Static Data Filepath : C:\TEMP\Sample_Calibration_Static_File.csv Brows	e 3 years v 0 month v
Dynamic Data Filepath : C:\TEMP\Sample_Calibration_Dynamic_File.csv Brows	e
Calibration Multipliers Calibration Options	
Default : 1.000 Remove Invalid Loans	
Prepayment: 1.000	
Run Calibration Portfolios	Export Calibration Result
Calibration Reports	
Results Errors	
Default Rate (Balance Weighted)	Default Rate (Count Weighted)
Exposure — APA — Realized	Count — APA — Realized
±2.50% -\$35.00 M ±2.50% -\$30.00 M ±30.00% -\$25.00 M ±1.50% -\$20.00 M ±1.00% -\$15.00 M ±0.00% -\$15.00 M ±0.00% -\$15.00 M ±0.00% -\$50.00 M ±0.00% -\$50.00 M	800 -700 -
0.00% 7 7 8 0 0 1 1 1 0 9 90 0 M 0.00% 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	201504 - 201504 - 201504 - 201502 - 201
Prepayment Rate (Balance Weighted)	Prepayment Rate (Count Weighted)
Exposure APA Realized *335.00 M *30.00 M *30.00 M *225.00% *30.00 M *225.00 M *255.00 M *25	Count APA Realized 400 500% 400 500% 400 500% 400 500% 400 500% 400 500% 400 500% 400 500% 400 500% 400 500% 400 500% 500 400 500% 400 500% 500 400 500 500 500 500 500 500

Sources: Moody's Analytics, Auto Portfolio Analyzer

Questions & Answers

Jui-Chuan Wu (Amy)

Director Moody's Analytics Jui-Chuan.Wu@moodys.com

David Fieldhouse

Director Moody's Analytics David.Fieldhouse@moodys.com

MOODY'S



Contact Us: Economics & Business Analytics Offices

West Chester, EBA-HQ +1.610.235.5299

121 North Walnut Street, Suite 500 West Chester PA 19380 USA

New York, Corporate-HQ +1.212.553.1653 7 World Trade Center, 14th Floor 250 Greenwich Street

New York, NY 10007 USA

London

+44.20.7772.5454 One Canada Square Canary Wharf London E14 5FA United Kingdom

Toronto

416.681.2133 200 Wellington Street West, 15th Floor Toronto ON M5V 3C7 Canada

Prague +420.22.422.2929 Washingtonova 17 110 00 Prague 1 Czech Republic

Sydney

+61.2.9270.8111 Level 10 1 O'Connell Street Sydney, NSW, 2000 Australia

Singapore +65.6511.4400 6 Shenton Way #14-08 OUE Downtown 2 Singapore 068809

Shanghai

+86.21.6101.0172 Unit 2306, Citigroup Tower 33 Huayuanshiqiao Road Pudong New Area, 200120 China

help@economy.com

moodysanalytics.com

© 2020 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES. CREDIT COMMITMENTS. OR DEBT OR DEBT-LIKE SECURITIES. AND MOODY'S PUBLICATIONS MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY, CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS. INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR, MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE,

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or

damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt

securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$2,700,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at <u>www.moodys.com</u> under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings). No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJKK or MSFJ (as applicable) for ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY250,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.