Introduction

Auto retention values were not immune to the slowdown in the U.S. economy in the third quarter. Wholesale used-vehicle value retention dropped 1.7% in September on a year-over-year basis. This at a time when U.S. economic growth slowed from 3% a year earlier to about 2%. Additionally, job growth has roughly halved over the same period, going from 225,000 new jobs to just over 110,000 new jobs per month. Third quarter GDP growth was the slowest of 2019 and the slowest year-over-year growth since 2016. The 1.7% drop in used-vehicle value retention in September was the largest monthly decline since July 2017.
Auto retention values were not immune to the slowdown in the U.S. economy in the third quarter. Wholesale used-vehicle value retention dropped 1.7% in September on a year-over-year basis. This at a time when U.S. economic growth slowed from 3% a year earlier to about 2%. Additionally, job growth has roughly halved over the same period, going from 225,000 new jobs to just over 110,000 new jobs per month. Third quarter GDP growth was the slowest of 2019 and the slowest year-over-year growth since 2016. The 1.7% drop in used-vehicle value retention in September was the largest monthly decline since July 2017.

The slowdown in vehicle price growth is less obvious when looking at the average statistics of the wholesale market. As shown in Table 1, average vehicle sale prices increased almost 2% in the third quarter. This is a large improvement compared with the year-over-year declines experienced through the end of 2018 and into early 2019. Still, this average price is less indicative of the market movement and biased by the makeup of the vehicle being sold on the market. For example, if there is a larger share of trucks and SUVs at auctions this quarter than in the third quarter of 2018, then this will explain the increase, even if the trucks and SUVs were selling for less than they were the previous year. Additionally, if MSRP growth were to skyrocket and vehicles were retaining the same percentage of value, then this will also show an increase in average price, hence the need for the hedonically driven price index methodology.

This methodology can be used to further narrow the scope of the analysis into what the movement has been in the market by focusing on individual subsegments. Movements within subsegments can give a clearer picture of the supply and demand dynamics taking place within the used-vehicle market. For instance, Chart 2 shows that sale prices for cars have continued to increase through out the third quarter, but there has been a decrease in the sale price for trucks and SUVs. This tells the story of how the market

Chart 1: Used-Vehicle Value Growth Slows
Moody’s Wholesale Price Indexes, SA, Jan 2010=100

Table 1: Seasonal Decrease in Auction Prices
Wholesale used-vehicle auction summary

<table>
<thead>
<tr>
<th></th>
<th>2019Q3</th>
<th>2019Q2</th>
<th>2019Q1</th>
<th>2018Q4</th>
<th>2018Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg sale price, $</td>
<td>10,825</td>
<td>11,138</td>
<td>10,602</td>
<td>10,502</td>
<td>10,618</td>
</tr>
<tr>
<td>Avg sale price, % change yr ago</td>
<td>1.95</td>
<td>3.84</td>
<td>-0.28</td>
<td>-1.32</td>
<td>-1.33</td>
</tr>
<tr>
<td>Avg price-to-MSRP ratio</td>
<td>0.34</td>
<td>0.35</td>
<td>0.34</td>
<td>0.34</td>
<td>0.34</td>
</tr>
<tr>
<td>Sale volume</td>
<td>1,913,701</td>
<td>2,032,097</td>
<td>1,969,859</td>
<td>1,857,644</td>
<td>1,909,561</td>
</tr>
<tr>
<td>Sale volume, % change yr ago</td>
<td>0.22</td>
<td>1.51</td>
<td>10.39</td>
<td>17.67</td>
<td>5.41</td>
</tr>
<tr>
<td>Lease/fleet sale volume</td>
<td>773,146</td>
<td>829,911</td>
<td>807,011</td>
<td>739,344</td>
<td>718,977</td>
</tr>
<tr>
<td>Lease/fleet sale volume, % change yr ago</td>
<td>7.53</td>
<td>6.42</td>
<td>9.25</td>
<td>8.44</td>
<td>-5.48</td>
</tr>
<tr>
<td>Lease/fleet penetration rate, %</td>
<td>0.41</td>
<td>0.41</td>
<td>0.41</td>
<td>0.40</td>
<td>0.38</td>
</tr>
</tbody>
</table>

Sources: NADA, Moody’s Analytics
has become saturated with trucks and SUVs as they come to dominate both new- and used-vehicle sales. At the same time, demand for smaller and less expensive cars has not dropped as far as the supply would indicate, allowing prices on used cars to appreciate. The split between car and trucks is also evident when looking at year-over-year changes in the retention index shown in Chart 3.

The difference in segments can be broken down further, as shown in Table 2. The table shows the retention value index by the National Automobile Dealers Association-defined subsegments. From this disaggregated view, one can see that SUVs across the spectrum have been losing value this quarter, with premium SUVs hit especially hard. Moreover, this is not the only segment driving the downward trend, as every size of pickup truck decreased year over year in each month this quarter. The only truck/SUV sub-segments to increase in value retention this past quarter were large and midsize vans.

Cars were more of a mixed bag, with sports cars performing well and non-sport premium cars losing retention value.

Outside of the price indexes, it is also useful to look at vehicles by age. When looking at the specific age of a vehicle over time, this can limit movement of the two largest drivers of depreciation: years on the road and mileage. As shown in Chart 4, the age of the vehicle has been an important differentiator showing which vehicles have been increasing in terms of the price-to-MSRP ratio and which have not. In more than 11 of the past 13 months, autos under 6 years old have increased in their price-to-MSRP ratio, and this is not because the denominator has decreased. This trend has subsided in the past two months, and now all age cohorts are experiencing the decreases associated with the most recent slowdown in economic activity.

One age cohort of interest is 3-year-old vehicles. These vehicles are important, as they tend to be off-lease cars and trucks that hit the market all at once. Chart 5 shows trucks and SUVs in this cohort perform particularly well in terms of the price-to-MSRP ratio. This may appear to be a disconnect in regard to the retention statistics in Table 2; however, those numbers were showing that the price-to-MSRP ratios, all else equal, were declining. Here they are declining from a higher starting level. This point is reinforced in Chart 6, which shows 3-year-old pickups losing value at an elevated clip.

**Outlook**

Despite the recent economic slowdown in the third quarter of this year, we expect the U.S. economy to continue growing steadily throughout the fourth quarter. Our probability of recession model put the chance of recession at 11% in the next six months. To put...
this in perspective, the average for the recession probability is 22% and our baseline forecast does not work in a recession unless the chances surpass 60%. Given the steady growth expected across the wider economy and the limited supply pressures from slowing new-vehicle sales, Moody’s Analytics expects vehicle retention values to grow over the next 12 months, with growth being fastest in the car segment. Over the medium term, our forecast has the unemployment rate increasing in the second half of 2020. This increasing unemployment is expected to ding demand and lower retention values slightly through 2021 and into 2022, as shown in chart 7.
About the Authors

Michael Brisson is a senior economist and associate director at Moody’s Analytics. He is the lead auto economist, working as a member of the Specialized Modeling group in West Chester PA. Mike works developing new empirically driven auto-related products and services. Prior to joining the Specialized Modeling group, Mike built CECL, CCAR, and stress-testing models of consumer loan performance as a member of the Business Analytics team. Additionally, Mike has worked in the Moody’s Analytics Research group, where he developed models for state and local government revenue forecasts. Mike holds a PhD in applied economics from Northeastern University.

Loc Quach is an associate economist with the research group at Moody’s Analytics. He covers state and regional economies. Loc also contributes to the U.S. macroeconomic forecast model. He holds an MS in quantitative economics from California Lutheran University and a BA in economics from California State University, Long Beach.
About Moody's Analytics

Moody's Analytics provides financial intelligence and analytical tools supporting our clients' growth, efficiency and risk management objectives. The combination of our unparalleled expertise in risk, expansive information resources, and innovative application of technology helps today's business leaders confidently navigate an evolving marketplace. We are recognized for our industry-leading solutions, comprising research, data, software and professional services, assembled to deliver a seamless customer experience. Thousands of organizations worldwide have made us their trusted partner because of our uncompromising commitment to quality, client service, and integrity.

Concise and timely economic research by Moody's Analytics supports firms and policymakers in strategic planning, product and sales forecasting, credit risk and sensitivity management, and investment research. Our economic research publications provide in-depth analysis of the global economy, including the U.S. and all of its state and metropolitan areas, all European countries and their subnational areas, Asia, and the Americas. We track and forecast economic growth and cover specialized topics such as labor markets, housing, consumer spending and credit, output and income, mortgage activity, demographics, central bank behavior, and prices. We also provide real-time monitoring of macroeconomic indicators and analysis on timely topics such as monetary policy and sovereign risk. Our clients include multinational corporations, governments at all levels, central banks, financial regulators, retailers, mutual funds, financial institutions, utilities, residential and commercial real estate firms, insurance companies, and professional investors.

Moody's Analytics added the economic forecasting firm Economy.com to its portfolio in 2005. This unit is based in West Chester PA, a suburb of Philadelphia, with offices in London, Prague and Sydney. More information is available at www.economy.com.

Moody's Analytics is a subsidiary of Moody's Corporation (NYSE: MCO). Further information is available at www.moodysanalytics.com.

DISCLAIMER: Moody's Analytics, a unit of Moody's Corporation, provides economic analysis, credit risk data and insight, as well as risk management solutions. Research authored by Moody's Analytics does not reflect the opinions of Moody's Investors Service, the credit rating agency. To avoid confusion, please use the full company name “Moody's Analytics”, when citing views from Moody's Analytics.

About Moody's Corporation

Moody's Analytics is a subsidiary of Moody's Corporation (NYSE: MCO). MCO reported revenue of $4.4 billion in 2018, employs approximately 13,100 people worldwide and maintains a presence in 42 countries. Further information about Moody's Analytics is available at www.moodysanalytics.com.
CRÉDIT 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. 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 THEREON. MOODY’S CRÉDIT RATINGS AND PUBLICATIONS ANNUALLY INCLUDE AN INDEPENDENT ANNUAL REVIEW OF THE CRÉDIT RATINGS. 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 CRÉDIT 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 CRÉDIT 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 CRÉDIT 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 SUCCESSFUL 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.

All information contained herein is obtained by MOODY’S from sources believed 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 SUCH RATING OR OTHER INFORMATION 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 appraisal and rating services rendered by it fees ranging from $1,500 to approximately $2,500,000. 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 that 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 www.moodys.com under the heading “Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy.”

Additional terms for Australia only: Any publication in 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. It would be reckless and inappropriate for retail investors to use MOODY’S credit ratings or publications when making an investment decision. If in doubt you should contact your financial or other professional adviser.

Additional terms for Japan only: Moody’s Japan K.K. (“MJJK”) 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 Japan K.K. (“MSFJ”) is a wholly-owned credit rating agency subsidiary of MJJK. MSFJ is not a National 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. MJJK 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.

MJJK 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 MJJK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJJK or MSFJ (as applicable) for appraisal and rating services rendered by it fees ranging from ¥200,000 to approximately ¥250,000,000.

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