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Hot topics in auto finance
Lease residuals

Residual risk management has never been more challenging. A variety of market factors is creating the most complex residual market in a decade.

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## Record auto leasing in the past six years is leading to record end-of-lease returns

The popularity of leasing has never been higher, as the lease/loan mix of auto financing has grown from 15.7 percent in 2011 to 24 percent leases[1] in 2016. The surge in the popularity of leasing can be accredited to several factors:

- Lease payments on average are 23 percent lower than finance payments,[2] providing an attractive option to buyers who are monthly payment driven.

- While leases have historically been viewed as a niche product for wealthy buyers of luxury automobiles, Millennials view leases as an opportunity to possess the latest automotive technology that is under warranty coverage for the duration of their drivership.

- Record auto sales in the past six years were driven primarily by increases in leasing volume—one quarter of new vehicle transactions resulted in a lease.[3] As those leases near the end of their term, they are likely to set a particularly high rate of lease returns (see figure 1).

Over the next three years, 12 million vehicles are expected to reach their end of lease,[4] and with more lessees returning vehicles in favor of new models, the majority of off-lease vehicles will require a dealer or third party to recondition and remarket the vehicle.

These vehicles represent an increase in the used car supply, which is creating downward pressure on lease residual values (the expected sales price of an off-lease vehicle at the end of the lease). As a result, the vehicles are retaining less market value year over year, a trend that is expected to continue.[5]

Figure 1: Lease volume and percentage is increasing

- Lease percentage
- Lease volume
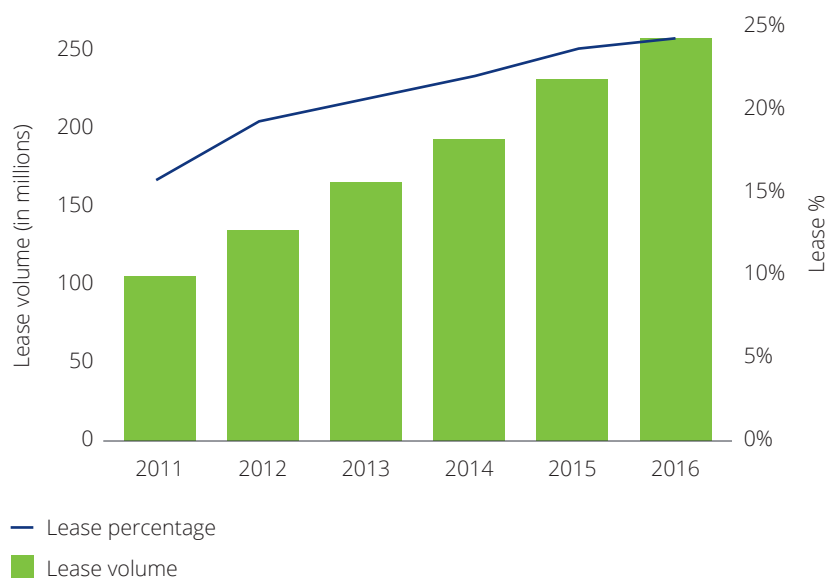
Source: Big Wheels Auto Finance Data 2017, page 5.

Other market factors are further complicating the lease residual market

Despite record auto sales in seven of the last eight years,[6] new auto sales are expected to drop 1.5-5 percent in 2018 and possibly dropping from 17M in 2017 to 15M by 2020.[7] This includes a decrease in lease originations for the first time since 2012. Furthermore, recent extreme weather, such as Hurricane Harvey and Hurricane Irma, pitched another forecasting curveball. The hurricanes damaged hundreds of thousands of vehicles,[8] which has reduced the supply of quality used vehicles available and could potentially increase selling prices. On the other hand, the potential for decreasing trust regarding the resale of vehicles exposed to such events could result in a decrease in demand for used vehicles and place downward pressure on price. This ambiguity is a prime example of the complexity the market faces today.

A differentiated response to the residuals issue could mean a competitive advantage

Given the unsettled nature of the market, automotive finance companies should consider proactive methods to managing their residual risk. This effort requires a comprehensive approach spanning many segments of the business (see figure 2) and may even include OEMs, based on the nature of the relationship (captive or otherwise).

Figure 2: Functions to include in a residual risk team

Driving forward with a full pit crew
- OEM sales incentives
- OEM vehicle engineering
- OEM vehicle production
- Finance residual modeling
- Finance dealership relationships
- Finance remarketing
- Finance accounting
- Industry specialists

While each of these functions can operate independently, a well-coordinated residual risk team is crucial to a successful response. For example, model redesigns (engineering), large sales incentives programs, or large production schedules could drive a decrease in residual market values. With this advanced knowledge, finance companies can adjust their pricing and leverage their dealership relationships (both guided by advanced predictive models) to minimize off-lease returns, and work with vehicle remarketing team members to maximize the auction price of returned vehicles. The modeling team must account for all of these items and work with all internal stakeholders to confirm that its residual risk management and remarketing pricing strategy are in harmony to forecast lease maturities for business planning and appropriate depreciation and impairment monitoring.

Top areas of focus to minimize residual risk

At its core, a residual value is a prediction of the future. An unfortunate reality of the process is prediction risk. However, finance companies have many leading techniques at their disposal to properly measure and react within this economic climate:

- Enhanced model risk management practices
- Advanced data analytics models
- Dealership incentive programs
- Strategic business planning

Optimally, auto finance companies should focus their energies on three areas:

- Improved modeling for better predictions
- Earlier warning of when market conditions and predictions diverge
- Developing a plan to recognize the sale price of returns

Improved modeling for better predictions

The use of modeling provides an opportunity to improve business practices around many aspects of the leasing life cycle. While certain challenges may arise from the use of modeling, sound model risk management practices can help mitigate many of these challenges. These practices include policies and procedures around model development, implementation, and use; model validation; and model governance.

One area in the leasing life cycle for which companies are increasingly leveraging models is predicting lease residuals. Generally one of two approaches is used:

• The first approach relies on forecasted residual values from *independent industry experts*. This approach can create challenges for organizations because industry experts understandably allow limited transparency into their proprietary modeling methodology. Furthermore, these experts often only provide a point estimate—the most likely outcome—rather than a range of values that the residual value might take, which is particularly necessary for business planning in a volatile market. As a result, it is difficult to determine the level of precision in the estimate—and the nature and magnitude of adjustments to a forecasted value—when market factors change.

• The second approach is based on regression, which models lease-end values directly as a function of macroeconomic, vehicle, and consumer factors. While this type of approach is more easily adapted to the unique environment of an organization, and can often lead to more accurate forecasts than the approach described above, there are certain challenges. While some input variables are static over time (make, model, geographic location of lease, etc.), many variables are dynamic and can be difficult to predict. These include economic variables such as GDP and fuel prices, vehicle specific factors such as mileage at lease end, and assumptions related to consumer behavior such as lease-end return rates. In particular, market supply of new and off-lease vehicles can have a strong impact on lease-end valuations, but can be very difficult to predict due to external influences.

Fortunately, there are a number of model risk management techniques available to help overcome the challenge of input uncertainty. For example, sophisticated time series analysis can be used to forecast input variables with a rich history of data. Sensitivity and scenario analysis can be used to provide insights into the potential impact of variables that are difficult to predict. In addition, procedures like backtesting and benchmarking may be performed both during model development and on an ongoing basis to periodically reassess the accuracy of model performance. Finally, the judgment of business executives can be integrated into the forecasting process to help organizations balance the trade-off between accuracy and conservatism in their forecasting process.

In addition to using models for predicting residual values, modeling can be used for many other aspects of the leasing process:

• **The setting of the contract residual creates a tradeoff.** A high contract residual helps lower the lessee's monthly payment. However, it also results in the increased likelihood of the vehicle being returned at the end of lease. The finance company bears the risk of remarketing when the lease is returned. The structuring of lending programs (which could involve terms different from the standard lending program) that are designed to proactively target lessees with attractive financing packages to facilitate and induce the purchase of a vehicle could also maximize the economics for the finance company.

• **Managing lease return rates is critical to residual risk management.** Dealership incentive programs are developed to encourage dealerships to take possession of the vehicle at lease termination. Data modeling can enable a dynamic incentive program that recognizes the equity position of the dealership and the finance company to optimize return behavior.

• **When the original lessee retains ownership of the vehicle, the finance company doesn't bear the risk of remarketing**. However, the lessee also may no longer be in the market to lease or purchase a new vehicle. In the case of vehicles that are not returned, many dealerships prefer paying off the lease to retain ownership of the vehicle. Modeling who is most likely to buy out the lease—the dealership or the lessee—is important to the overall business strategy for the OEM and the finance company.

- **When a vehicle is returned, the finance company wants to maximize the sale price.** Data models help predict seasonal or market changes of sales prices (enabling optimized lease pull-ahead programs).

- **Modeling provides the finance company and OEM with a comprehensive view.** It shows how sales incentives, model changes, and vehicle production can influence residual sales.

Earlier warning of when market conditions and predictions diverge

Typically, market residual values are updated on a regular basis from lease origination through termination. This is an important process, as it sets depreciation rates and informs the business of projected end-of-lease losses. Early warning is critical to accurate depreciation and planning and can be accomplished by:

- Enhancing valuation models (independent of industry experts) to better gauge economic conditions driving changes in valuation and be more responsive to them.

- Updating residual values more frequently, which enables near-time monitoring and boosts the ability to swiftly redirect business strategy.

Developing a plan to maximize the sale price of returns

If the finance company is unable to incentivize the dealership to pay off the lease and purchase the vehicle for resale, then typically the vehicle is sent to auction. As previously discussed, understanding seasonality and predicted near-term changes in economic factors can help maximize auction price.

Where to start?

A finance company considering its options for lease residual valuations can leverage the experience of Deloitte's automotive finance team, which brings together three groups of professionals:

- **Automotive finance specialists:** Professionals who have worked with leading automotive finance companies in residual value management and vehicle remarketing.

- **Model risk management:** Experienced modelers who employ a regimented approach to predictive residual value analytics, model implementation, validation, governance, and controls.

- **Advanced analytics:** Professionals with in-depth knowledge of cutting-edge cognitive and machine learning capabilities, driving actionable intelligence from historical data and and experience economic models.

Collectively, Deloitte's specialists excel at advanced modeling practices in the lease residual space. They leverage historical data, combined with real-time information, to predict the broad range of possible residual value outcomes. Armed with this data, Deloitte's lease residual valuation professionals suggest valuable programs and techniques that help evaluate the residual risk in the lease portfolio, as well as execute leading strategies to minimize lease residual losses.

As auto finance companies address their lease residual challenges, they can turn to **Deloitte Quantum Automotive Finance**, a cognitive-enabled tool designed to evaluate residual risk that tailors an actionable response to trends in the marketplace and uses machine learning methods to improve its predictive power and efficacy over time (see figure 3).

Figure 3: Deloitte Quantum Automotive Finance evaluates residual risk
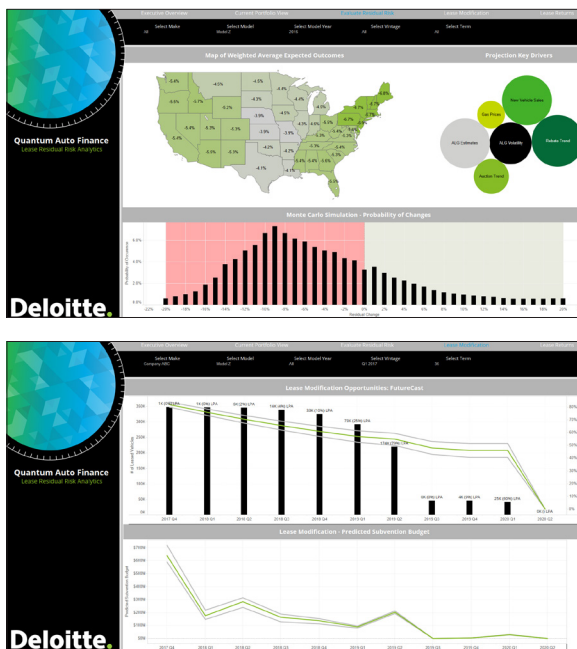
Deloitte's strength in residual value management provides the relevant skills and experience that can assist in employing a well-rounded approach to residual risk management.

Driving forward

Automotive finance organizations should recognize the various demand-side and supply-side market forces impacting residual values. Appropriate model risk management techniques can help confirm appropriate procedures are followed. Advanced analytics techniques can help improve the accuracy of residual value forecasts, as well as help optimize sale proceeds at the end of the lease. Many segments of the business have vital roles to play in this process, and Deloitte can help empower OEMs and automotive finance companies to team together to strengthen their lease residual approach.

During periods of significant market complexity, it is important to actively manage potential scenarios. A 5 percent decrease in residual values could lead to a $7B shock to the auto finance industry. Companies should put a proactive plan in place that adequately monitors and responds to market fluctuations— potentially saving 5 to 15 percent of MSRP by decreasing lease returns and encouraging dealership payoffs, while improving customer retention. By enhancing existing residual modeling and lease pull-ahead programs via analytics tailored to each lease, **Deloitte's Quantum Automotive Finance** tool could help achieve that goal by monitoring market conditions, considering dealership/lessee behaviors, and recommending actions to effectively manage residual risk.

Endnotes

1   Big Wheels Auto Finance Data 2017, *Auto Finance News*, 2017.

2   "Number of Leased Vehicles Reaches All-Time High in First Half of 2016," Edmunds.com news release, July 28, 2016.

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4   "U.S. used-car glut is a dealer's dream, automakers' nightmare," Reuters, March 12, 2017.

5   Used Vehicle Market Report Q2 2017, Edmunds.com, November 9, 2017.

6   Mike Colias and Adrienne Roberts, "Auto Sales Growth Stalls—Annual drop of 1.8% is first in eight years, but pickups and SUVs bolster U.S. results," *The Wall Street Journal*, January 4, 2018.

7   "U.S. Car Sales Will Slip A Bit In 2018, But Things Could Get Grim After That," *Forbes*, December 28, 2017.

8   Steven Wilmot, "Harvey's Destroyed Cars Give Auto Industry Hope" *The Wall Street Journal*, September 6, 2017.

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