



**John Smigelsky, CFA**

Vice President  
Investment Grade Credit Research



**Gary Stromberg**

Principal  
High Yield Credit Research

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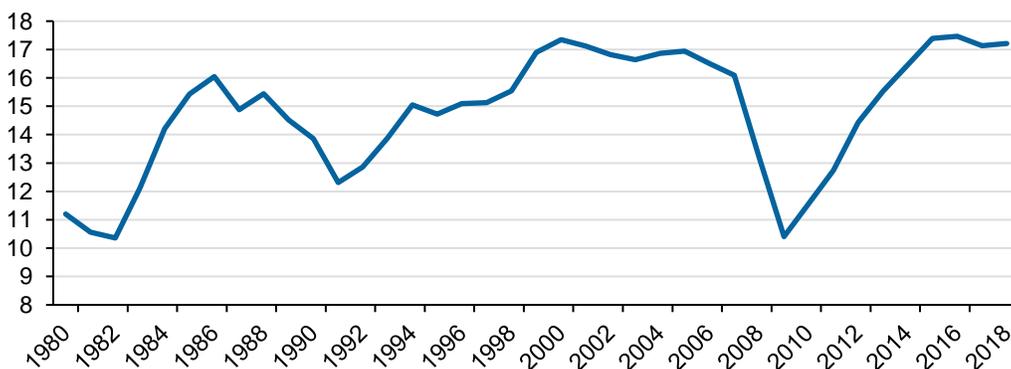
## The U.S. Automotive Industry: Downshifting but Still Moving Forward

*In addition to the mounting cyclical challenges confronting the U.S. automotive industry after years of strong growth, automakers and suppliers also face an uncertain future made up of rapid technological change and the potential full-scale realignment of the personal ownership business model. This paradigm shift, which will become a reality in the not-so-distant future, adds layers of complexity for management teams and investors as the industry battles the challenges of the auto cycle in the short term, while positioning to win the auto 2.0 war. Our investment framework for the U.S. automotive sector combines our analysis of current auto cycle fundamentals with an assessment of the risks and opportunities created by macroeconomic volatility and the nascent era of increasing electrification, autonomy, and shared mobility. Given the scale and scope of the coming changes, we expect this framework, combined with our bottom-up credit selection process, to become even more critical to consistent alpha generation.*

### PEDAL TO THE METAL

The United States economy is nearing a decade of growth following the global financial crisis (GFC), and the domestic automotive industry has followed a largely similar path. For example, annual light vehicle sales increased from a trough of 10.4 million units in 2009, which precipitated a full-scale crisis in the industry, to a high of 17.6 million units in 2016, which represents an eight-year compounded annual growth rate (CAGR) of 7.7%, as illustrated in Figure 1. This marked improvement was guided by several factors, particularly the steady growth in the U.S. economy (Figure 2) and the concurrent decline in the rate of unemployment from a high of 10% in late 2009 to a recent low of 3.9% (Figure 3). The growth in consumer confidence—which has risen to its highest levels since the late 1990s—has also been a driving factor, providing the psychological impetus that has enabled consumers to make large purchases.

**FIGURE 1: U.S. ANNUAL LIGHT VEHICLE SALES (MILLIONS OF UNITS)**

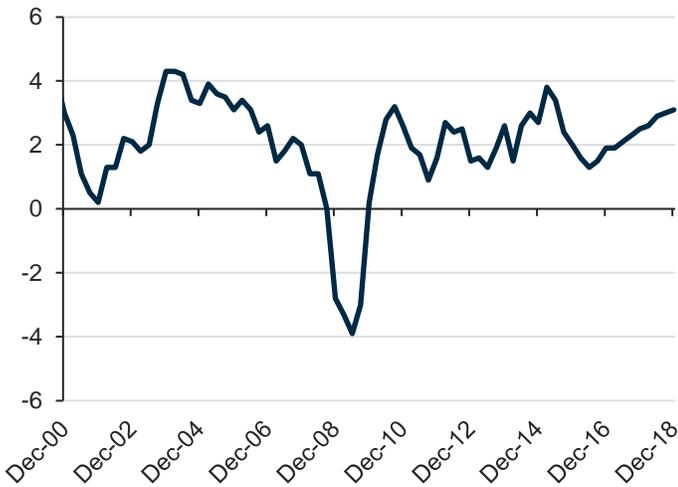


Source: Bloomberg/Ward's as of December 31, 2018.

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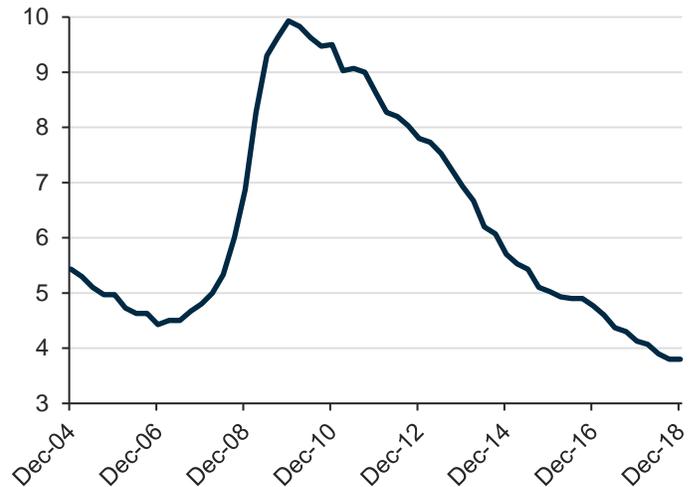
**For Professional Investors Only.** All Investments involve risk, including the possible loss of capital.

**FIGURE 2: U.S. GDP (YoY % CHANGE)**



Source: Bloomberg as of December 31, 2018.

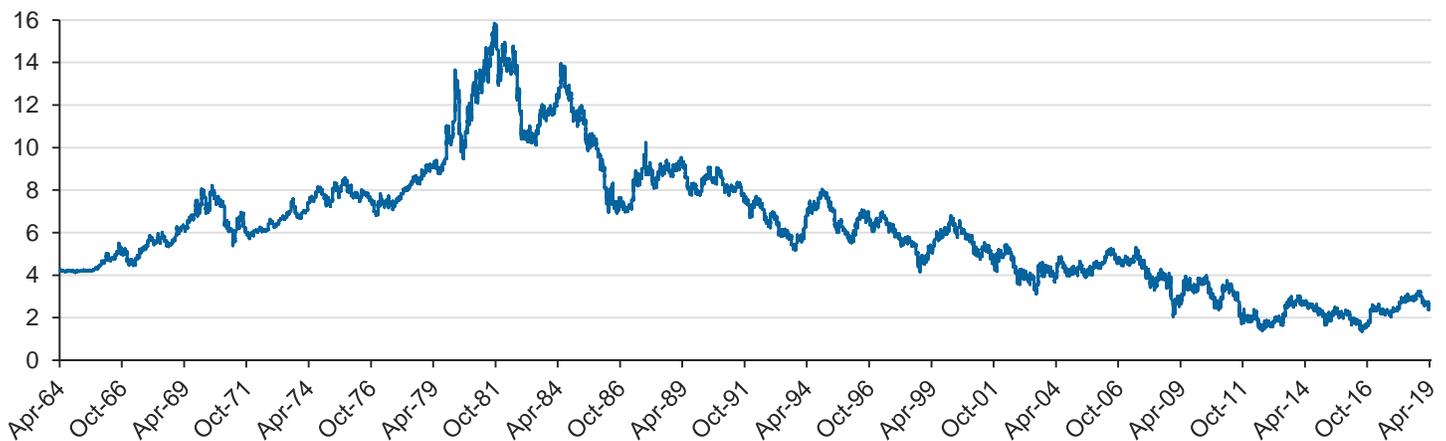
**FIGURE 3: U.S. UNEMPLOYMENT RATE (%)**



Source: Bloomberg as of December 31, 2018.

On top of the solid U.S economic growth, auto sales have also benefited from the historically low interest-rate environment (Figure 4) and highly-accommodative financing. Interest rates play a major role in the affordability of vehicle purchases, considering the average amount financed on a new car purchase currently exceeds \$30,000.<sup>1</sup> The persistently low level of interest rates since the GFC, in concert with highly accommodative terms, has allowed consumers to lease or purchase increasingly expensive vehicles without a commensurate increase in monthly payment. For example, the average loan term in 2012 was approximately 65 months, while the current average term is closer to 70 months with terms of 84 months becoming more common. As such, the 22% increase in the average amount financed on a vehicle purchase since 2011, or approximately \$5,500, has resulted in an average monthly payment increase of only 11%, or approximately \$50 per month, as noted by Experian. Additionally, buyer incentives, in the form of subvented interest rates<sup>2</sup> or cash back, steadily increased throughout the recovery and helped automakers direct model sales and control inventory.

**FIGURE 4: U.S. 10-YEAR TREASURY YIELD (%)**



Source: Bloomberg as of March 31, 2019.

However, even with unit sales volumes remaining at historically strong levels of about 17.2 million in 2017 and 2018, the sales cycle has come off the 2016 peak as pent up demand has been satisfied, fiscal stimulus has started to fade, and concerns have emerged around marginal affordability. Nonetheless, consensus expectations are calling for an “eroding plateau,” as coined by Barclays

<sup>1</sup> Based on an average finance amount of \$30,977 as reported in Experian’s Q3 2018 report.

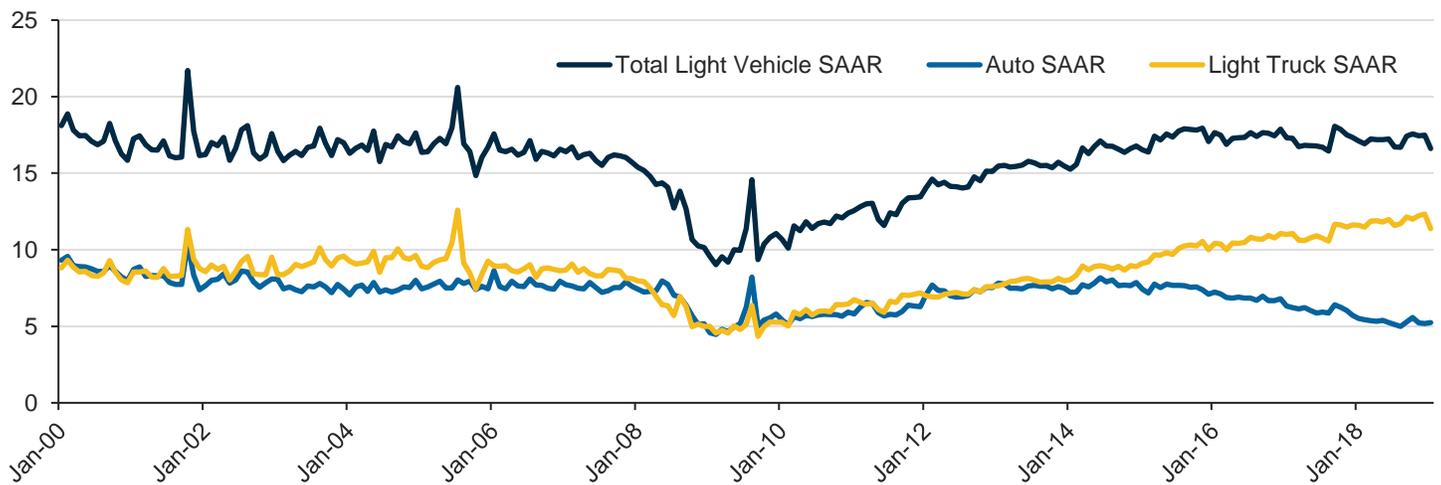
<sup>2</sup> The term refers to an interest rate offered by automakers that is below the prevailing market rate of interest.

in July of 2016, as the measured downward pressure exerted by these developing headwinds is largely offset by the auto industry’s persistently favorable fundamental backdrop.

## BIGGER IS BETTER

**An accompanying shift in the model landscape that has helped to bolster profitability and reshape future production decisions has complemented the industry’s overall growth profile.** While sales of passenger cars in North America have been falling for the past five years (with a unit sales decline of about 34% since 2014), the appetite for light trucks, sport utility vehicles (SUVs), and commercial vehicles has grown stronger. This has caused a large shift in vehicle mix in North America with production shifting away from passenger cars into trucks and SUVs. Cars represented roughly 49% of U.S. light vehicle sales in 2010, while trucks/SUVs/crossover utility vehicles (CUVs), and vans made up 51% of sales, as observed in Figure 5. By 2018, that had shifted to 31% cars and we believe the car mix will be less than 30% by 2020.

**FIGURE 5: U.S. SEASONALLY ADJUSTED ANNUAL RATE (SAAR; MILLIONS OF UNITS)**



Source: Bloomberg and Wards as of January 31, 2019.

## KEEP ON TRUCKIN'

Commercial trucks are another bright spot in the North American auto space. Specifically, Class 8 heavy duty trucks (“18 wheelers”), have been on a tear, with ACT Research<sup>3</sup> reporting that 2018 Class 8 orders were up 65% compared to 2017. Additionally, 2018 was a record year for annual net orders, totaling 490k units, which exceeds the previous annual record set in 2004 by 100k units. The short-term outlook for the Class 8 segment remains positive with high freight volumes, the boost from tax reform, and supply constraints (electronic logging device (ELD) and driver shortages) driving elevated freight rates and carrier profits. Additionally, new vehicle features within the segment are continuing to boost Class 8 demand. While historically among the most volatile and cyclically sensitive, the tailwinds in this space could continue, barring a recession in the U.S.

As average transaction prices (ATPs) tend to increase in tandem with a move up in vehicle size, the average transaction price of vehicles sold in 2018 increased to around \$33,500, up from around \$32,000 five years ago.<sup>4</sup> Accordingly, while the U.S. seasonally adjusted annual rate (SAAR) has been flat over the past two years, the true “value of SAAR” has been increasing given the greater mix of higher-margin vehicles being sold. For example, UBS estimates that General Motors’ (GM) 2016 earnings before interest and taxes (EBIT) margin for large trucks was 17%, compared with -2% for cars, while EBIT margins at Ford were 20% for large trucks/SUVs and -9% for small cars. Their analysis concluded that Ford and GM are losing a combined \$1.2 billion annually through the sale of small cars.<sup>5</sup> Perhaps it is no wonder that original equipment manufacturers (OEMs) are moving away from small car production, as evidenced by the recent decisions to eliminate once popular models, such as Ford’s Fusion, Focus, and Fiesta, and GM’s Chevrolet Cruze and Malibu. On the supplier side, American Axle has also stated that the content per vehicle (CPV) opportunities for light trucks could be 3-4x (or more) greater than that of cars, supporting profitability throughout the supply chain.

While it appears this change in mix largely reflects American consumers’ preference for larger vehicles, we’d note the shift also accelerated with the decline in oil prices that began in late 2014, as subsequent car production began to decline materially despite overall growth for light vehicles. Encouragingly for the producers, this trend has held firm even in the face of increasing gasoline prices. We believe the gradual nature of fuel price increases, the proliferation of smaller car-like crossover utilities, and the solid strides made in overall fuel efficiency could make this shift in consumer preference prove to be sticky over the longer term. **However, as this preference shift progresses, a significant upwards fuel price shock would be a risk to producer volumes and margins, particularly as some OEMs scale down passenger car production.**

## BUT CYCLICAL HEADWINDS ARE EMERGING...

**As with any industry cycle, several factors that boosted growth over the past decade have begun to shift from tailwinds to headwinds.** Interest rates, while still low historically, have increased meaningfully from their 2016 lows. Additionally, there are signs that lenders are beginning to pull back on their loose standards as FICO scores continue to trend higher and loan terms reach their max. With a significant portion of a car’s value typically financed, higher interest rates and tighter underwriting could limit the market for auto sales, potentially leading to trade-downs in model or trim level, or a shift from new to used vehicles at the margin. Similarly, automakers have made a concerted effort to rein in incentive spending, evidenced by the year-over-year incentive decline over the last four months of 2018, as reported by Autodata. While this enhances ATPs and could strengthen margins in the near term, it could also further strain affordability in a declining sales environment.

Another significant factor impacting vehicle financing is the shift toward leasing. Due to the increased popularity of leasing over the past several years, the industry is bracing for a wave of late-model used vehicle supply amid expectations for higher lease returns. Off-lease maturities totaled about 3.5 million units in 2017 and are set to increase to approximately 4.3 million units by 2020, according to Cox Automotive estimates. This compares to almost 2.5 million of leased vehicle returns in 2008 and a low near 1.5 million at the trough of the leasing cycle in 2011. This elevated level of supply is expected to put pressure on used car pricing, which becomes a headwind for vehicle producers in multiple ways. Most directly, lower used car pricing typically spills through into new car pricing as the differential widens. This can take the form of consumers simply trading down to a used car as the relative price becomes more attractive or through the increased cost of leasing due to lower residual value—which represents the estimated price of the vehicle at the end of the lease and determines how much of the vehicle value the lessee will be responsible for. The changing mix of vehicles could also serve as an additional hurdle, with CUVs making up an increasing percentage of leases and therefore lease returns. As the market gets flooded with higher levels of used CUV inventory, in addition to the array of new CUV models being launched, automakers will be susceptible to heightened price competition

<sup>3</sup> “ACT Research: NA Class 8 Orders Totaled 490,100 Units in 2018”, ACT Research Press Release, 1/4/19.

<sup>4</sup> TrueCar ALG monthly ATP estimates as of December 31, 2018.

<sup>5</sup> “The Cars Are Small, but the Losses Are Large”, 6/21/17.

on one of their more profitable production lines. **Accordingly, we would tend to favor automakers that have worked to manage their lease exposure in advance of this potential risk.**

## ...ALONG WITH MACRO RISKS

**On top of the cyclical pressures noted above, North American automakers and suppliers also face another layer of potential risk from rising commodity prices amid ongoing global trade tensions.** Although progress has seemingly been made in U.S./China trade discussions, the industry has already felt the impact of the Section 232 tariffs imposed by President Trump, which set a 25% duty on imported steel products and a 10% duty on aluminum products. In assessing the tariff impact, we note that average steel costs in the U.S. increased by 36% in 2018 compared to 2017.<sup>6</sup> According to Ford CEO Jim Hackett, these tariffs have made steel more expensive in the U.S. than in any other market and cost the company about \$1 billion in annual profit.

Following those levies, the administration implemented an additional 10% tariff on Chinese imports, which included several auto parts used in North American production. The latest round of tariffs could potentially increase if negotiations breakdown materially or upon the expiration of a second mutually agreed upon trade war pause that went into effect in late February 2019. While President Trump has also threatened a 25% tariff on auto imports from the European Union (EU) based on national security concerns, **PGIM Fixed Income believes that a potential trade war with the EU is unlikely to materialize before the 2020 U.S. presidential election. However, we acknowledge the possibility that U.S./EU trade tensions could escalate if President Trump is reelected.**

**In general, North American OEMs are well shielded from this potential EU import tariff as their production supporting the U.S. market is nearly all contained within the North America Free Trade Agreement (NAFTA) region.** However, this would be a significant headwind for European producers like Volkswagen (VW), BMW, and Daimler. The signing of the United States-Mexico-Canada Agreement (USMCA) to reshape NAFTA has likely resolved the largest overhang for U.S. auto producers, though ratification will not occur until later in 2019 and is no longer assured with a split Congress.

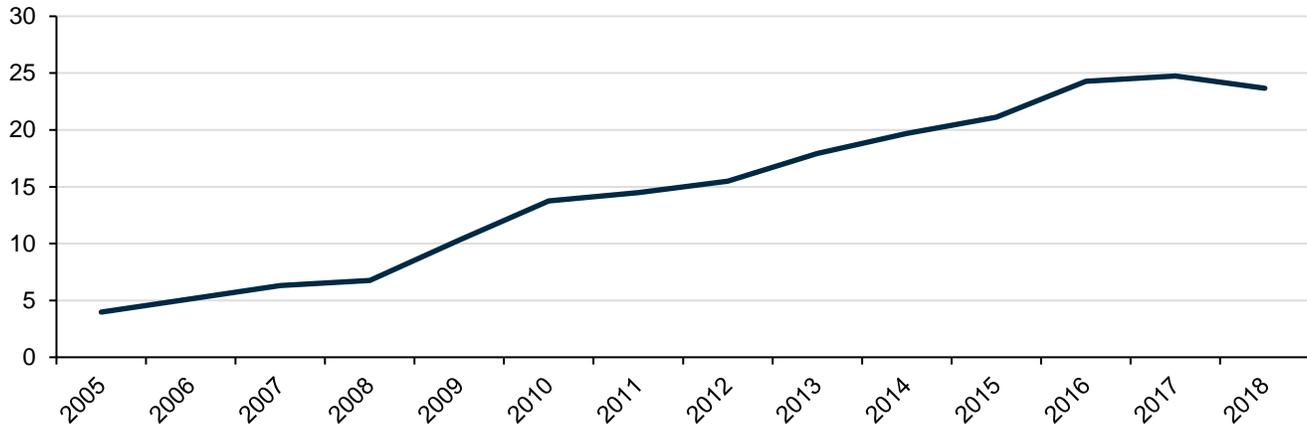
## CHINA: A SPATTERING GROWTH ENGINE

China became the largest market for auto sales in 2010 and has grown at a steady rate since, climbing from less than 4 million units sold in 2005 to a peak of almost 25 million in 2017 (Figure 6). As such, the country has become an increasingly important market to the global auto producers that conduct business in China under various joint venture (JV) partnerships—global OEMs have historically not been permitted to have fully-owned operations in the country. VW was an early mover in China, establishing its JV operations in 1984, while GM began operating in 1997 and Ford followed in 2001. In April 2018, Chinese officials announced plans to phase out JV requirements for foreign OEMs by 2022 with restrictions on foreign ownership of electric vehicle (EV) production ending in 2018. Tesla became the first automaker to take advantage of the change, beginning construction of a wholly-owned production facility in Shanghai in early 2019. The Chinese passenger vehicle market has become much more competitive as it has grown, driven by the establishment and growth of global automakers, the increasing quality of local Chinese brands, and the introduction of various new models and vehicle types. But what had

<sup>6</sup> Source: JPM/CRU Monitor as of December 31, 2018.

been a lucrative growth market for the OEMs turned challenging in 2018 as Chinese vehicle sales growth turned negative in June. This trend then accelerated into year-end and led to the market's first down year (-4%) in decades.

**FIGURE 6: CHINA'S ANNUAL AUTO SALES (MILLIONS OF UNITS)**



Source: Bloomberg as of December 31, 2018.

The weakness has been linked to several factors, particularly escalating trade tensions between the U.S. and China, weaker-than-expected growth in the Chinese economy, weakening in the Chinese stock market, and tightening consumer credit stemming from the government crackdown on peer-to-peer (P2P) lending. The increase in the tariff on U.S.-built vehicles has also been a meaningful drag on the profits of brands like Tesla, BMW, and Ford's Lincoln, which import higher-end U.S.-produced models to be sold in China. **Historically, the Chinese government has tended to step in to support the economy when it encounters headwinds, which seems to be a fair assumption in the near term.** One major tactic that has influenced the auto market in the past is the government's manipulation of the vehicle purchase tax, which was cut to 5% from 10% in 2016 to stimulate growth. The rate was subsequently raised to 7.5% in 2017 and back to 10% in 2018. **There had been speculation that the purchase tax rate could again to be cut to 5% to stimulate auto demand in 2019, but the government has held the rate flat into March 2019.**

## AUTOMAKERS ATTEMPT TO MAINTAIN TRACTION

Given the nature of the automotive industry, in which profit margins remain relatively thin (even at the top of the cycle), management teams must remain nimble and move proactively to counter signs of weakness. **While fundamentals are currently solid in the U.S. auto market, the resulting impact from the gradual weakening of the sales cycle, ongoing cost pressures, challenges in international markets, and changing consumer tastes has already begun to show up in the profitability of notable industry players.** And as a result, issuers have announced preemptive restructuring actions that will be implemented over the coming years.

For example, Ford has been hit particularly hard by rising costs and a precipitous decline in its China sales, as adjusted EBIT margin has declined from 7.5% in 2016 to 6.1% and 4.4% in 2017 and 2018, respectively. In response, Ford has provided glimpses of a two-pronged strategy geared towards reducing costs and restructuring its international operations. **Through the first program, dubbed the "Fitness Redesign," management intends to reduce costs by \$25 billion over the next three to five years, primarily out of the North American business, which includes the elimination of nearly all car models.** The second plan includes eliminating or optimizing underperforming product lines, primarily in Europe and South America, and is expected to result in \$11 billion of charges, \$7 billion of which will be cash.

GM followed with its own plan that includes the closure of seven manufacturing plants, reducing headcount by nearly 15,000, and eliminating several of its own car models. This is expected to result in \$3.0-\$3.8 billion of charges, \$2 billion of which will be cash. This plan would also generate \$6 billion of incremental cash flow by year-end 2020 for use in emerging technologies, such as electrification and autonomous vehicles. It should be noted that GM took a very significant first step in rightsizing its international businesses with the sale of its European brands, Opel and Vauxhall, to Groupe PSA in 2017. GM's EBIT-adjusted margin improved from 8.6% in 2016 to 8.8% in 2017 but declined to 8.0% in 2018.

Source of previous section: Company filings and management commentary.

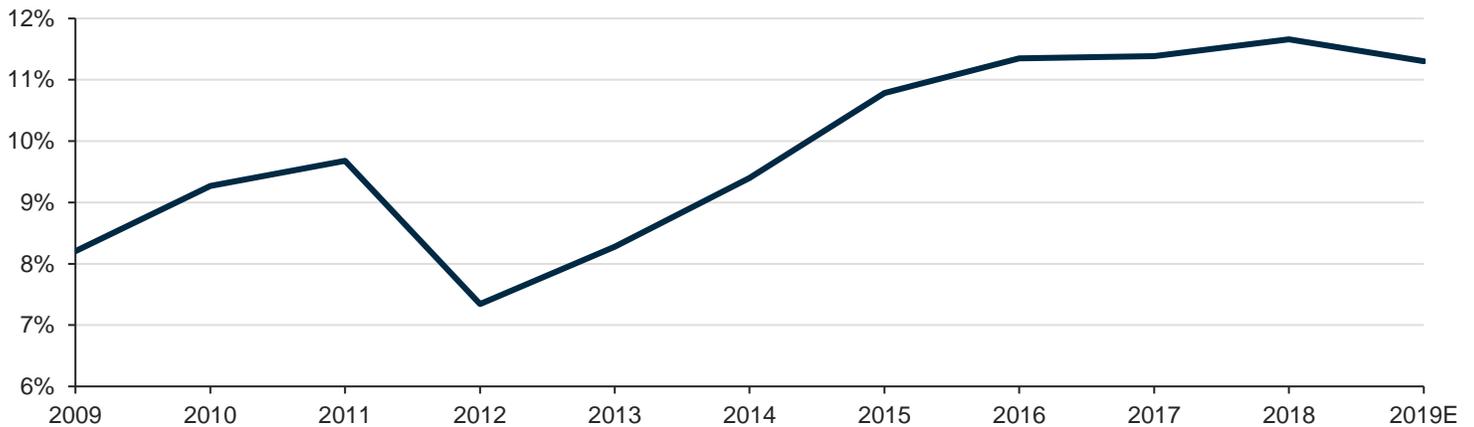
## AUTOMAKERS APPEAR BETTER EQUIPPED FOR THE ROAD AHEAD...

Despite the cyclical challenges and uncertain future of the automotive industry, U.S. automakers appear to be in better shape to weather an industry downturn than in the past, reflecting a leaner cost structure and heightened focus on profitable sales as opposed to overall market share. For example, based on management commentary, Ford and GM could potentially operate at breakeven in the U.S. at a SAAR between 11-12 million units. This compares to a much higher pre-crisis breakeven level of around 16 million units and reflects a meaningful cushion below the current U.S. SAAR of around 17 million units. The companies also boast relatively conservative leverage profiles, retain meaningful cash and short-term investment balances (Ford with \$23.0 billion and GM with \$22.0 billion as of year-end 2018), and reserve additional credit line capacity to provide a liquidity cushion in a downturn scenario. Additionally, we are encouraged by the strength of the captive finance companies within the large OEMs, which can provide an additional source of cash flow in a declining sales market. **When considering bond investments, we favor companies with strong liquidity, low leverage, flexible cost structures, and leverage to growing parts of the auto ecosystem, including light trucks/SUVs/commercial vehicles and electrification.**

## ...AS AUTO SUPPLIERS PRESENT HEADWINDS FOR BOND INVESTORS

While we believe U.S. auto suppliers are also generally better positioned heading into the next downturn—with lower leverage profiles, reduced pension obligations, leaner cost structures, and OEM's continued preference to outsource components—the combination of the emerging headwinds and corporate rightsizing discussed above will affect the production decisions of the global automakers in coming years, presenting volume related challenges for their suppliers. Although the aforementioned strength in light trucks and commercial vehicles has provided some tailwinds for companies exposed to this segment, we believe three specific additional headwinds make investing in the traditional auto supplier space a near-term challenge. First, rising commodity costs and launch-related issues are expected to further squeeze margins that may become difficult to recapture in higher pricing. Second, we are seeing more debt-financed acquisitions given fairly un-levered balance sheets, creating more idiosyncratic risks for bond investors. With cyclical tailwinds stagnating, suppliers are increasingly focused on acquisitions to augment growth (e.g. American Axle and Manufacturing, Dana Incorporated, Tenneco Automotive) and navigate emerging and potentially disruptive secular trends, including electrification, semi-autonomous/autonomous driving, and shared mobility. We are also seeing corporate actions and share repurchases as an aid in bolstering equity returns. Third, the signs of softening in the Chinese auto market has the potential to stymie a lucrative growth market given the noted struggles with a weakening growth outlook, tighter credit, and waning of the demand pull forward from the 2015 stimulus package.

From 2009-2017, high yield auto suppliers have benefitted from synchronous top-line growth driven by more content per vehicle and lower commodity costs. Over that period, the peer group of U.S.-based auto suppliers has increased its Earnings Before Interest, Tax, Depreciation, Amortization (EBITDA) margin from 8.2% to 11.4%. Over that same timeframe, Debt/EBITDA has declined to 3.7x from 5.0x, and average ratings increased to Ba3/B1 from B3/Caa1. However, even with flat SAAR, many companies are beginning to experience margin pressure that we believe will continue into 2019, as shown in Figure 7.

**FIGURE 7: AGGREGATE EBITDA MARGINS FOR SELECT SUPPLIERS (%)**

Source: Q4 2018 Company Filings; PGIM Fixed Income Estimates as of March 31, 2019.

The previously discussed Section 232 tariffs have lifted steel and aluminum prices, and while many suppliers can utilize passthrough pricing mechanisms, they are often on a lag. We are also seeing some suppliers struggle with self-inflicted wounds, most notably, inefficient program launches as foreign and domestic OEMs gear up to compete in the growing CUV/SUV/light truck segments. As a result of the increased North American consumer demand for these vehicles, there has also been an increase in the number of program launches associated with new models, the revival of discontinued product lines (i.e., Ford Ranger, Ford Bronco, Chevrolet Blazer), and substantial updates to existing flagship truck programs (i.e., Ford F150, Ram 1500, Chevrolet Silverado, Jeep Wrangler, Lincoln Navigator). **While increased content on new CUV/SUV/LT programs is an opportunity for suppliers to drive margin expansion over the long term, the large number of new launches has increased near-term execution risk, which was evident in the commentary and performance of several suppliers over the last year as inefficiencies and unexpected launch-related issues were cited as drivers of margin compression. As a result, we believe EBITDA margins for most suppliers are likely to decline in 2019.**

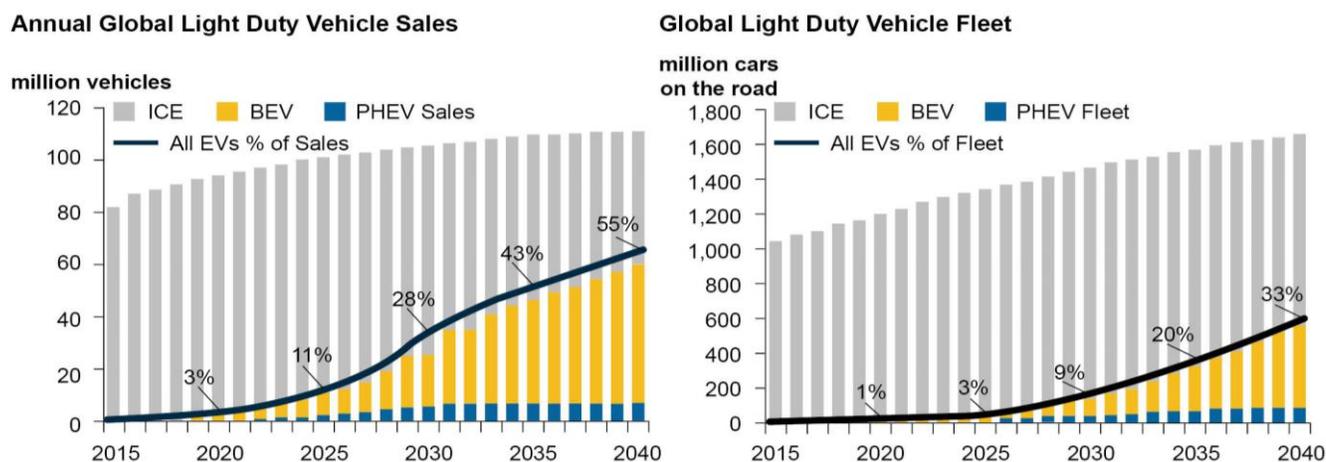
## DETOUR AHEAD? AUTONOMY, ELECTRIFICATION, AND RIDE SHARING

We see two significant disruptions to the automotive eco-system, that are likely to come to fruition within the next ten years.

### I. Electrification

This innovation will play a key role in changing the automotive landscape as the industry begins to move away from the internal combustion engine (ICE) and towards EVs, particularly battery electric vehicles (BEVs). **While they represent only a small fraction of the current market, EV sales are expected to grow at a meaningful rate, which will require significant investment from automakers and suppliers.** An August 2018 study by consulting firm AlixPartners stated that the global auto industry plans to spend about \$255 billion to develop more than 200 electric models globally by 2023. According to Bloomberg New Energy Finance, 28% of global new car sales will be EVs by 2030 with China driving the majority of the growth. By 2040, 55% of all new car sales and 33% of the global fleet are estimated to be electric, as observed in Figure 8. As battery cost and range appear to be the major limiting factors at this point, **we believe full BEV adoption could occur more quickly if battery technology improves (i.e., faster charging, greater range, etc.) and costs decline faster than expected.** Of note, Bank of America equity analysts expect that EVs will achieve total cost breakeven with conventional cars by 2023. Other factors that could lead to a sharper increase in EV penetration include: regulation and incentives, attractiveness of the car itself, and development of charging infrastructure.

FIGURE 8: SALES BY POWERTRAIN TYPE



Source: Bloomberg New Energy Finance, May 2018. Note: PHEV = plug-in hybrid electric vehicle.

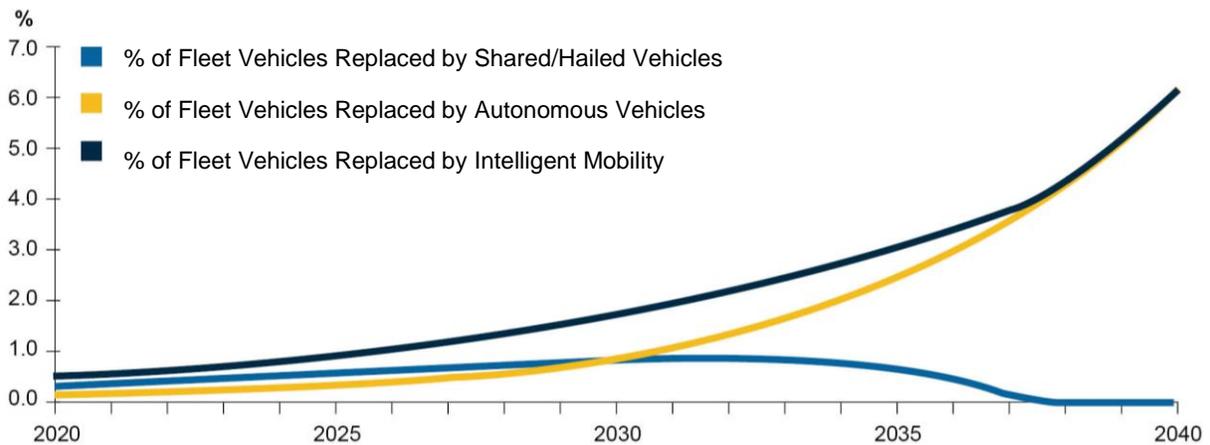
**This generational change in powertrain technology will impact OEMs and suppliers in several ways.** First, the shift to hybrids and ultimately BEVs will require considerable capital and likely pressure returns in the early lifecycle of the programs. The pressure on capital and returns makes it imperative that the industry maintain strong balance sheets and healthy liquidity. Next, there is downside for suppliers of ICE-specific content, including exhaust, fuel systems, transmissions, and engines. However, electric vehicle-specific content, including battery cells and pack, electric motor and drive, and power electronics could provide additional revenue opportunities. Finally, it remains unclear how quickly consumers will adopt EVs and how quickly battery costs can come down, highlighting risks of early investments in this capital-intensive industry.

## II. Ride Sharing and Autonomous Technology

Advancements in this technology could fundamentally reshape the consumer's relationship with the automobile. Consider that vehicles in the U.S. sit unused about 95% of the time, and when they are used, they are inefficient (i.e., less than 30% of the energy from the gasoline in a car is used for propulsion). If these inefficiencies can be reined in, driverless electric vehicles designed for shared transportation service in the U.S. could reduce out-of-pocket and time costs by 80%—to \$0.25 per mile from \$1.50 per mile currently.<sup>7</sup> A network of autonomous shared vehicles would also offer increased access to transportation, particularly in emerging markets, while expanding the potential pool of users and total miles driven. **Since these shared autonomous vehicles are able to operate continuously throughout the day, utilization rates will increase significantly, limiting the number of total units required. As the service becomes cheaper and more reliable, consumers, particularly in urban centers, may ultimately choose to forgo personal vehicle ownership altogether in favor of an Uber-like ride hailing service or a potential subscription-based network. These factors could ultimately result in a headwind to vehicle sales volumes, as miles are spread across a smaller and more efficient global car parc.** Although Bloomberg New Energy Finance expects that autonomous driving will have little impact until 2030, it expects that the intelligent mobility fleet could grow to over 20 million vehicles by 2040, which would account for 7% of EV sales, as shown in Figure 9.

**This paradoxical outcome of total vehicle miles increasing as unit volumes decline has the potential to negatively impact players across the automotive value chain.** While automakers of today generate revenue primarily through vehicle sales and financing, a future of lower production and (potentially) increased commoditization would shift the value to the companies that own the technology and control the immense trove of data collected by the vehicle fleet. This explains why the major auto producers and suppliers are so invested in developing their own autonomous driving systems and related networks. Further, autonomous fleets have the potential to create opportunities for additional revenue streams by providing information, entertainment, and communication technology to passengers and interested partners, such as insurance companies, retailers, and service providers. **The challenge for the traditional automakers will be the shifting of their core competency of vehicle production to unfamiliar disciplines, such as fleet management, software development, artificial intelligence, and data collection/monetization.**

<sup>7</sup> Based on estimates published in "Autonomy: The Quest to Build the Driverless Car", 2018.

**FIGURE 9: U.S. FLEET REPLACED BY SHARED AND AUTONOMOUS VEHICLES**

Source: Bloomberg New Energy Finance as of December 31, 2018.

**While we acknowledge that it is much too early to pick the winners and losers in these emerging technology fields, the coming changes to the industry are also impossible for investors to ignore.** The major global automakers and suppliers continue to employ a balanced strategy, investing in virtually all areas of the transportation ecosystem as the future begins to take shape. However, the rise of technology has also prompted new competitors to enter the fold, including tech leaders like Apple and Google, which have the financial resources to get involved. **We would expect the coming decades to present many successes and failures, new partnerships and investments, and emerging clarity around the future competitive dynamic in the industry.**

## CONCLUSION

Although the U.S. automotive sector continues to enjoy solid sales volumes and robust demand for higher-margin vehicles, the combination of industry-cycle challenges, increasing macroeconomic risks, and the uncertainties associated with changes in automotive technology, could create a challenging road ahead for U.S. automakers and auto suppliers.

While PGIM Fixed Income believes the industry is much better positioned to weather a potential downturn today than it was in the past, we recognize the historical volatility of sector performance and the cautious sentiment expressed in current valuations. As we position to take advantage of the opportunities presented by the looming uncertainties of the current environment, we reiterate the importance of our fundamental credit analysis and bottom-up selection process. With an industry on the verge of such a foundational realignment, alpha generation will be driven by early recognition of the changing landscape and the ability of individual players to react and succeed.

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Source(s) of data (unless otherwise noted): PGIM Fixed Income as of April 2019.

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