The US automotive product pipeline

Car Wars 2017-2020

Industry Overview

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United States
Autos/Car Manufacturers & Auto Parts

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In-depth study of the US automotive product pipeline

Car Wars is an annual proprietary study that assesses the relative strength of each automaker's product pipeline in the US. The purpose is to quantify industry product trends and then relate our findings to investment decisions.

Car Wars thesis and investment relevance

We believe that the replacement rate drives showroom age, which drives market share, which in turn drives profits and stock prices. OEMs with the highest replacement rate and youngest relative showroom age have generally gained market share from 2001-16 (Table 1). We expect this relationship to hold over our forecast period of model years 2017-20 (Charts 1 and 2). We also expect that the total industry's profit momentum will be strong as more new models are launched in the next four model years (Chart 3).

Ten key findings of our study

1. Product activity is relatively solid at major OEMs, which is consistent with the later stages of a cyclical recovery. It should be noted that there is a proliferation of new nameplates in MY2019&2020 that may result in an increasingly crowded market.

2. New vehicle introductions are overweight in the CUV segment, a phenomenon sweeping the globe. Along with a relatively robust truck pipeline, this should drive a continued positive mix shift through MY2017-20.

3. Convergence of product cycles is intensifying at the majors as the laggards catch up. However, there is some volatility in MY2017-18, where Honda clearly leads.

4. GM product launches for MY2017-20 should drive strong mix, market share and, importantly, pricing, despite the extreme skepticism of investors.

5. Ford's product cadence remains well above average. This along with a richening mix should sustain pricing as Ford focuses on profit and leverages its global platforms.

6. FCA's launch cadence is accelerating materially in MY2017-20. This should bolster market share, but will likely require the support of heavy/burdensome investment.

7. Honda's product cadence remains above average. Toyota and Nissan are just below the industry average. The somewhat middling position of the J3 in total is a result of a relative resurgence of the D3 and their strength in trucks. Nonetheless, it is unlikely that the J3 will cede material market share over the next four years.

8. European OEMs in total are at the low end of the range with the largest component Volkswagen below the industry average and extremely overweight cars.

9. Hyundai and Kia have a relatively light cadence for MY2017-20. Combined with a concentration on small cars, this creates material risk to market share.

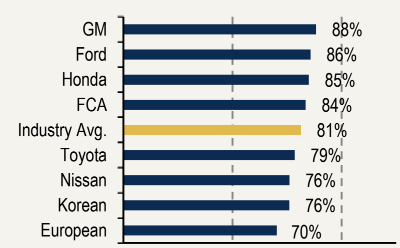
10. Suppliers are likely to benefit from the convergence of product cycles as OEMs turn to them for differentiated content and features. Dealers should benefit from the continued industry-wide stream of great product that draws consumers into showrooms and supports demand.

Table 1: Replacement rate, showroom age, market share (MY2001-2016)

	Avg. Replacement Rate [1]	Avg. Showroom Age O/(U)	US Market Share Δ[2]
FCA	14%	0.1	-0.5%
GM	14%	0.3	-10.7%
Ford	14%	0.9	-7.1%
European	15%	(0.2)	2.5%
Industry	16%	0.0	0.0%
Nissan	18%	(0.3)	4.4%
Toyota	18%	(0.4)	4.2%
Honda	20%	(0.2)	2.2%
Korean	21%	(0.9)	4.6%

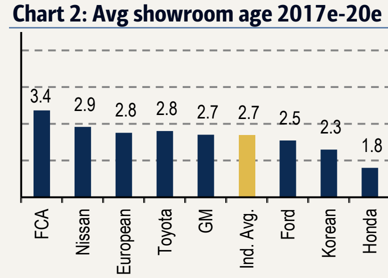
Source: BofA Merrill Lynch Global Research
[1] Market share is based on calendar years 2000-2015

Chart 1: Replacement rate 2017e-20e[1]



Source: BofA Merrill Lynch Global Research
[1] Cumulative replacement rate for MY2017-2020

Chart 2: Avg showroom age 2017e-20e



Source: BofA Merrill Lynch Global Research

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Executive summary

Car Wars is a proprietary study we conduct every year to assess the relative strength of each automaker's product pipeline in the US. It was published for the first time in 1991. The study is based on numerous primary and secondary sources, including industry contacts, auto show visits, trade publications, enthusiast magazines, supply chain relationships, our general knowledge of platform strategies, and product cycle planning.

The purpose is to quantify industry product trends and then relate our findings to investment decisions.

The key metrics that we use are the replacement rate (the estimated percentage of an OEM's sales volume to be replaced with new models or next generation models), average showroom age (the number of years on the market for the average design in an OEM's showroom), and new model volume mix (the mix of new models by segment during the forecast period for each OEM).

Car Wars thesis

We believe that the replacement rate drives showroom age, which drives market share, which in turn drives profits and ultimately stock prices. Table 2 shows the average annual replacement rate, relative showroom age, and market share change of the largest OEMs between MY2001 and MY2016.

Table 2: Historical replacement rate, showroom age, market share (2001-2016)

	Avg. Volume Replacement Rate [1]	Avg. Showroom Age O/(U) Industry Avg.	US Market Share Δ[2]
FCA	14%	0.1	-0.5%
GM	14%	0.3	-10.7%
Ford	14%	0.9	-7.1%
European	15%	(0.1)	2.5%
Industry Avg.	16%	0.0	0.0%
Nissan	18%	(0.3)	4.4%
Toyota	18%	(0.4)	4.2%
Honda	20%	(0.2)	2.2%
Korean	21%	(0.9)	4.6%

Source: BofA Merrill Lynch Global Research
[1] Volume weighted average annual replacement rate, [2] Market share change is based on calendar years 2000-2015

Although other factors, including mix, pricing, execution, distribution, and brand power impact market share, we think this data support our thesis that successful new products drive higher market share and profit. Table 3 summarizes our forecasts of these key metrics for MY2017-20 and subsequent estimates of market share shifts. Based on our estimates, convergence is intensifying with the relative resurgence of the Detroit Three, although there is some market share risk at Hyundai/Kia and Volkswagen. As a result, OEMs are likely to add content and features in an attempt to differentiate their product.

Table 3: Forecast replacement rate (MY2017-20e), showroom age (MY2017-20e), and market share change (CY2019 vs. CY2015) –

	Replacement Rate [1]	Avg. Showroom Age O/(U)	2015 Market Share	Direction of US Mkt. Share, CY19 vs. CY15
GM	22%	0.0	17.7%	↑
Ford	21%	(0.1)	14.7%	↑
Honda	21%	(0.9)	9.1%	↑
FCA	21%	0.7	12.8%	↔
Industry Avg.	**20%**	**0.0**	**nm**	**nm**
Toyota	20%	0.1	14.4%	↔
Nissan	19%	0.2	8.5%	↔
Korean	19%	(0.4)	8.0%	↓
European	18%	0.1	8.0%	↓

Source: BofA Merrill Lynch Global Research
[1] Volume weighted average annual replacement rate, [2] Directional market share forecast is for calendar years 2015 to 2019

Ten key conclusions

1. **Product activity is relatively solid at major OEMs.** This is consistent with a cyclical recovery and should support US auto demand. . It should be noted that there is a proliferation of new nameplates in MY2019&2020 that may result in an increasingly crowded market

2. **New vehicle introductions are overweight the CUV segment.** Along with a relatively robust truck pipeline, this should drive a continued positive mix shift in MY2017-20.

3. **Convergence of product cycles is intensifying as the laggards catch up.** There is some volatility in MY2017-18 where Honda clearly leads, but by MY2020 the four year cumulative replacement range will be the tightest ever. At that point the average age will be just 1.9 years with Toyota and Ford at the low end at about 1.7 years and Fiat Chrysler (2.1 years) and the Europeans (2.7years) relatively old.

4. **GM product launches for MY2017-20 should drive strong mix, market share and, importantly, pricing.** Intros are dominated by CUVs in MY2017-2018 and then trucks in MY2019-202. This strength appears to be extremely underappreciated by the market.

5. **Ford's product cadence remains well above average.** Although not at the top of the range, Ford's solid product cadence is further building the foundation of long-term success. Ford is also at the forefront of adding advanced features such as ADAS to its "mass market" products.

6. **Chrysler's launch cadence is accelerating materially in MY2017-20**. This likely bolsters market share, but will require the support of heavy investment. Our concern is that cash flow may fall short of management's ambitious plans and certain products could be delayed.

7. **The somewhat middling position of the J3 in total is a result of a relative resurgence of the D3 and their strength in trucks.** Honda's product cadence remains above average. Toyota and Nissan are just below the industry average. In total, it is unlikely that the J3 will cede material market share over the next four years.

8. **European OEMs in total are at risk of ceding market share.** In total, their replacement rate is at the low end of the range. The largest component Volkswagen is below average and extremely overweight cars.

9. **Hyundai and Kia have a relatively light cadence for MY2017-20.** Combined with a concentration on small cars, this creates material risk to market share.

10. **Suppliers and dealers should benefit from the continued product surge.** Suppliers are likely to benefits from the convergence of product cycles as OEMs turn to them for differentiated content and features. Dealers should benefit from the continued industry-wide stream of great product that draws consumers into showrooms and supports demand.

Car Wars background

The purpose of Car Wars

Background and purpose

Purpose of report: quantify industry product trends, market share shifts, and then relate conclusions to investment decisions.

Car Wars is a proprietary study we conduct every year to assess the relative strength of each automaker's product pipeline in the US. It was first published in 1991. The study is based on numerous primary and secondary sources, including industry contacts, auto show visits, trade publications, enthusiast magazines, supply chain relationships, our general knowledge of platform strategies, and product cycle planning.

The purpose of the report is to quantify industry product trends and then relate findings to investment decisions.

Key metrics

Replacement rate, average showroom age, and new model volume mix are the key metrics we calculate to analyze the OEMs' product pipeline.

The key metrics that we use include the following:

- **Replacement rate.** One of the simplest and most important ways to measure the strength of an automaker's product plan: the estimated percentage of its sales volume to be replaced with entirely new models or next generations of existing models.

- **Average showroom age.** The number of years on the market for the average model in an OEM's showroom (measured on a stand-alone basis and relative to the industry). This is sales volume weighted.

- **New model volume mix.** The mix of new models by segment during the forecast period for each OEM.

Our data collection is continuous, and we have developed a comprehensive database of US product activity going back to 1987 – through two cycle peaks and now two troughs. Once a year, we summarize our findings in a report and on a color poster. This year's study forecasts activity for the 2017-20 model years (2016-19 calendar years).

An independent view

Relative performance is what counts

Car Wars represents our independent view of automakers' competitiveness, so it does not necessarily agree with the views of the car companies. It is likely we are missing information on *all* OEMs. Therefore, despite differences of opinion on any one OEM's pipeline forecast, we believe that we have an accurate view of its relative position in the market; and in our view, that is what matters when forecasting market share.

"All-new" versus "new and improved"

Readers may find that our data might differ from the announcements OEMs make occasionally about the number of products they plan to launch. This is because our definition of a new product may differ from that of automakers. (New product definitions even vary from company to company.) In *Car Wars*, we include only products we judge to be all-new or next-generation vehicles – what the industry typically calls a major. We do not include mid-cycle enhancements, where only modest changes are made to the vehicle, but do concede there is an increasing focus by many OEMs to make more substantial mid-cycle enhancements that could create some distortions. In addition, we forecast volume based on what we think the average annual volume will be for the product over its entire model life. We do not use company sales targets or peak volumes, which could distort results. Importantly, the sum of our volume forecasts is limited to rational trend levels of US demand.

Car Wars thesis

Replacement rate → showroom age → market share → profits → share price

Our thesis is that an OEM's product replacement rate drives showroom age, which drives market share, which in turn drives profits and stock prices. Table 4 shows the average annual replacement rate, relative showroom age, and market share change of the largest OEMs between model years 2001 and 2016. The table shows how the OEMs with the highest replacement rate and youngest showroom age relative to the industry have generally gained market share. Although other factors, including mix, pricing, execution, distribution, brand power, and unforeseen disruptions impact market share, we think this data support our thesis that successful new products drive higher market shares.

Table 4: Historical replacement rate, showroom age, market share (MY2001-2016)

	Avg. Volume Replacement Rate [1]	Avg. Showroom Age O/(U) Industry Avg.	US Market Share Δ[2]
FCA	14%	0.1	-0.5%
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Source: BofA Merrill Lynch Global Research
[1] Volume weighted average annual replacement rate
[2] Market share change is based on calendar years 2000-2015

Based on the relative strength of this historical relationship, and taking mix and strategy into account, we forecast directional market share shifts for the major automakers in the US market relative to 2015 levels, which is summarized in Table 5. We will discuss the implications of these shifts in the following sections. Based on our estimates, it appears that the large market share shifts that occurred in the last decade are unlikely to continue. This will likely drive automakers to add content and features in an attempt to differentiate product, which should be positive for both suppliers and consumers.

Table 5: Forecast replacement rate (MY2017-20e), showroom age (MY2017-20e), and market share change (CY2019 vs. CY2015)

	Replacement Rate [1]	Avg. Showroom Age O/(U)	2015 Market Share	Direction of US Mkt. Share, CY19 vs. CY15
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Source: BofA Merrill Lynch Global Research
[1] Volume weighted average annual replacement rate, [2] Directional market share forecast is for calendar years 2015 to 2019

Industry & manufacturer trends

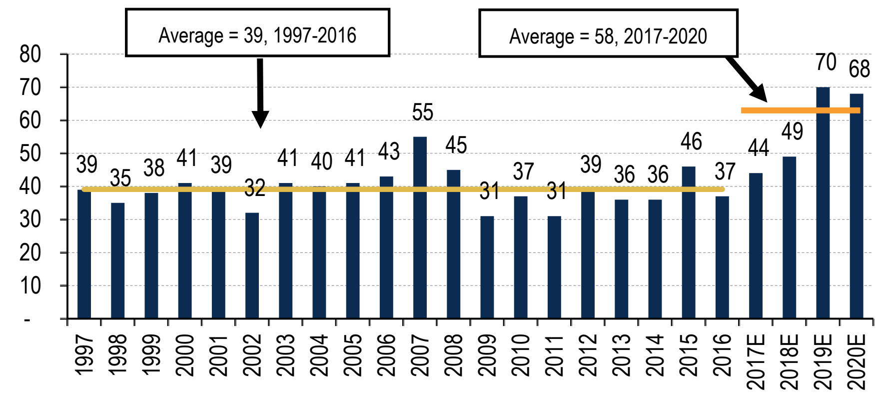
Industry & manufacturer trends
Industry trends

This section details product trends for the US auto market. The size, homogeneity, relatively rich mix, and the profitability of the US market continue to attract new investments. The accelerating boom of new model launches in the mid-2000s took a slight breather from model years 2009-14, but appears to be accelerating as the recovery takes hold and competition intensifies.

New model launch activity solid after a lull

As shown in Chart 3, we expect OEMs to launch 231 new models during our forecast period (MY2017-20), or an average of 58 per year. This rate is about 49% above the average number of models launched per year between 1997 and 2016, underscoring that competition is hot and should support demand. However, it should be noted that the extreme levels in MY2019 & 2020 are also a result of nameplates splintering.

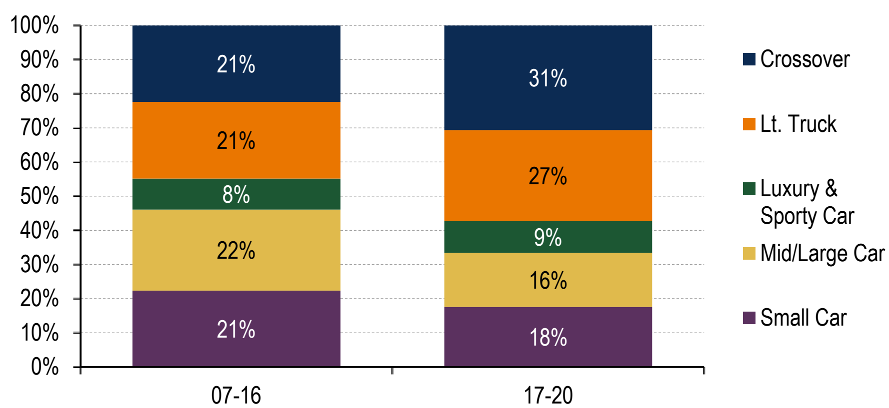
Chart 3: New model launches 2017e-2020e



Source: BofA Merrill Lynch Global Research

There are many factors contributing to the acceleration in product, including OEMs' rush to enter new vehicle segments (CUVs, hybrids, ultra-luxury, etc.), an aggressive push by some OEMs to expand product line-ups (e.g., Chrysler following the Fiat combination), as well as the relative richness and size of the US vehicle market. This is helping to drive an industry product pipeline that is overweight the CUV and light truck segments, which should drive a positive mix shift in MY2017-20 (Chart 4).

Chart 4: 2017e-20e new vehicle launch mix vs. 2007-16



Source: BofA Merrill Lynch Global Research

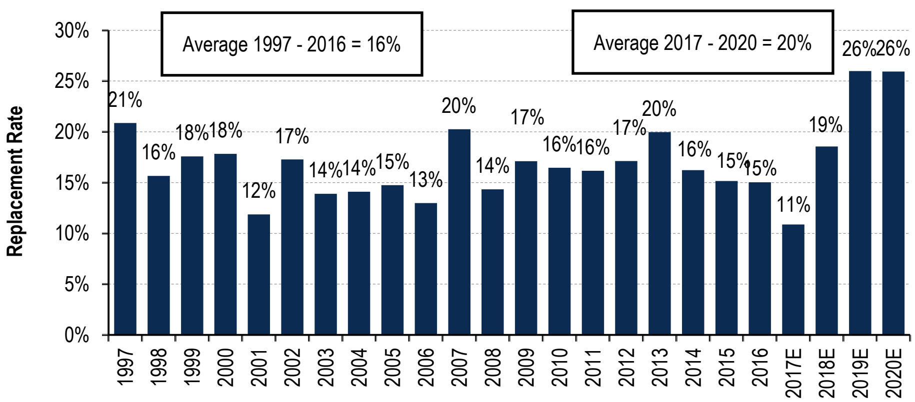
Replacement rate remains high in MY2017-2020

The replacement rate mirrors the trend in new model launches to a large degree. On average, between 1997 and 2016 the industry replaced about 16% of its volume each year with new models. At this rate, the industry turns over its entire model line about every 6 years. Over the next four years, we expect the annual replacement rate will trend higher at about 20%, above the historical average level. New volume mix is moving toward CUVs, representing about 31% of new volume launched from MY2017 to MY2020.

In our opinion, the continued strong pace of product activity can be linked to the competitive environment and demand recovery. As with all industries, auto companies can compete through cost leadership, superior product, or product differentiation. For most OEMs, the first strategy has been unachievable, and with the reorganized and restructured Detroit Three it is even tougher to differentiate on cost.

On the second strategy, there has been extreme convergence in quality as all automakers have improved to a relatively common level. That leaves almost all trying to compete by differentiating product. This has resulted in the strengthening pace of new model introductions. As automakers have benefited from the strength of the cycle, more are aiming to spur demand by launching fresh product with increased content rather than discounting stale models at the expense of margins. Obviously this is still a very competitive environment, but it is far better as supply and demand are much more balanced across the industry.

Chart 5: Replacement rate

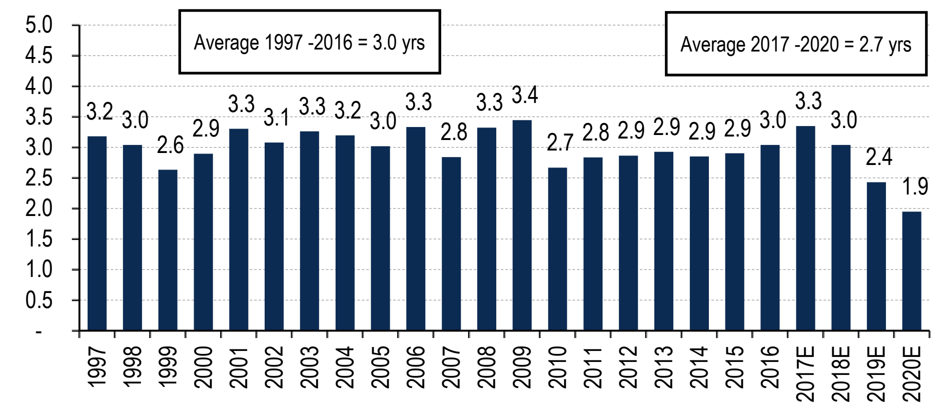


Source: BofA Merrill Lynch Global Research

Average showroom age remains low across the board

The age of vehicles on sale in showrooms across the US (Chart 6 on the following page) has been on a steady decline since the early 1990s, as automakers replace aging products more frequently. We attribute this trend to intensifying competition – in part from new entrants – and product line expansion by car companies that have introduced numerous new nameplates. We expect that the industry's average showroom age will trend lower, averaging about 2.7 years for model years 2017-20, a tick down from an average age of 3.0 years for the last decade.

Chart 6: Average showroom age [1]



Source: BofA Merrill Lynch Global Research
[1] Average is volume weighted

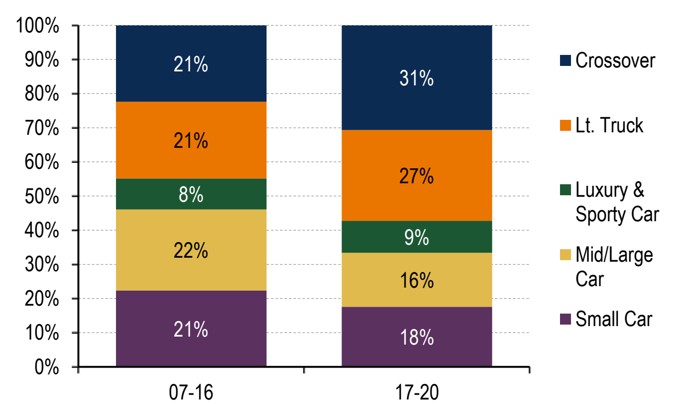
Intensified competition and the resulting new products are, of course, beneficial for consumers, who will enjoy the choice of new cars and trucks. However, this new product comes at a high cost to the OEMs, which will need to increasingly leverage global platforms and simplify product offerings to remain efficient and competitive. Although industrywide pricing has been challenged in the past, a relative level of price stability has emerged, as supply and demand are much more closely balanced.

New model segment shift toward Trucks and CUVs

Charts 7 and 8 show the US market's evolving market shift, based on the number of new models and volume, from traditional Small, Midsize and Large cars to Light Trucks and Crossovers.

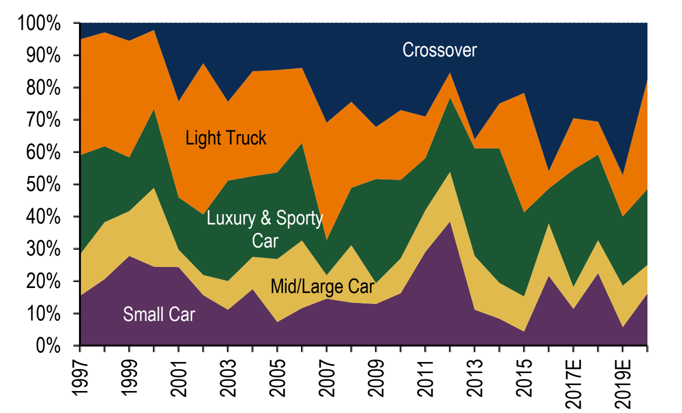
Since the MY1997 launch of the Toyota RAV4 and the Honda CR-V, Crossovers have been the fastest growing vehicle segment, which may accelerate in the upcoming model years. 73 of the 231 new models we forecast for 2017-2020, or 31%, will be Crossovers. The extreme focus ranges from more mainstream Detroit Three and Japanese OEM models to numerous new German luxury CUVs such as the Porsche Macan.

Chart 7: 2017e-20e launch mix vs. 2007-16 by volume



Source: BofA Merrill Lynch Global Research

Chart 8: New models by segment, simple vehicle count



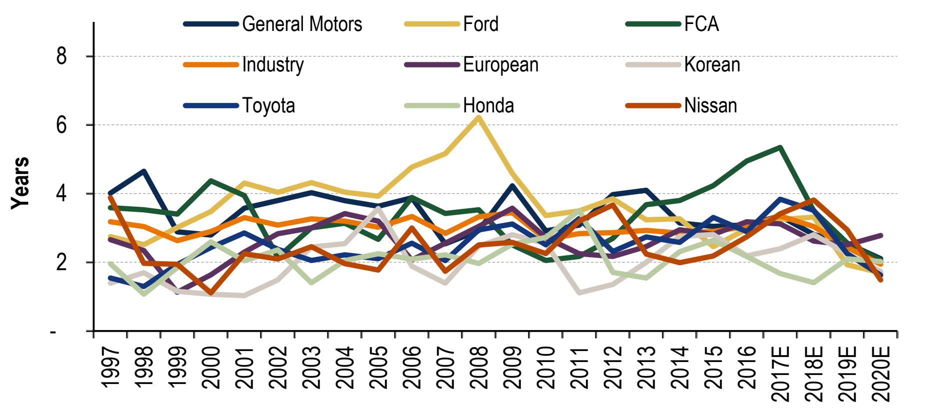
Source: BofA Merrill Lynch Global Research, not volume weighted

Manufacturer trends

Average showroom age converging around 2.7 years for the next four years

Average showroom age is one way to quantify how intensely competitive the US market has become in the last two decades (Chart 9). Since at least the late 1980s, there has been a significant convergence in average showroom age. We expect an increasing convergence in average showroom age to around 2.7 years, with only slight outliers on either end of the spectrum (FCA at 3.4 years and Honda at 1.8 years).

Chart 9: Average showroom age by OEM



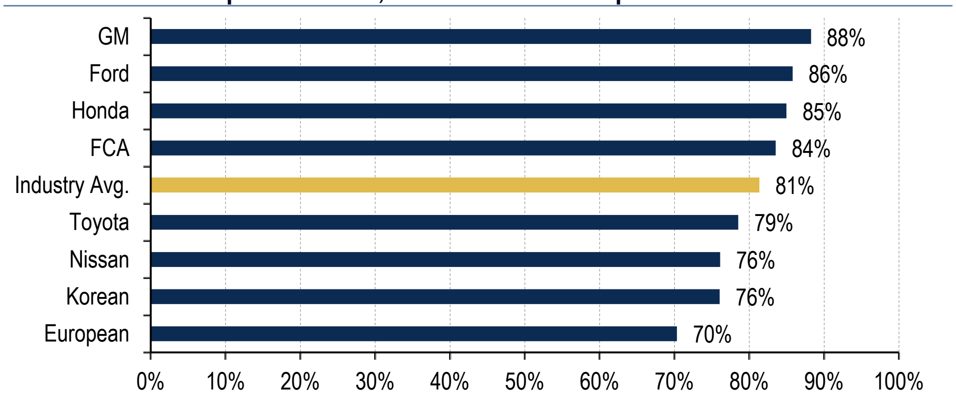
Source: BofA Merrill Lynch Global Research

Cumulative replacement rates appear to drive market share

Comparing cumulative replacement rates is one of the simplest and most effective ways in which we measure the strength of product plan. The replacement rate is the estimated percentage of sales volume to be replaced with entirely new models or next-generation existing models during the period.

Over the next four years, we estimate the industry will replace 81% of its volume based on 2015 industry volumes. We estimate that a relatively low level of disparity in replacement rates will result in smaller market share shifts in the future. This differs greatly from the last few decades, when large shifts were the norm.

Chart 10: Cumulative replacement rates, % of 2015 CY volume replaced in MY 2017e-20e



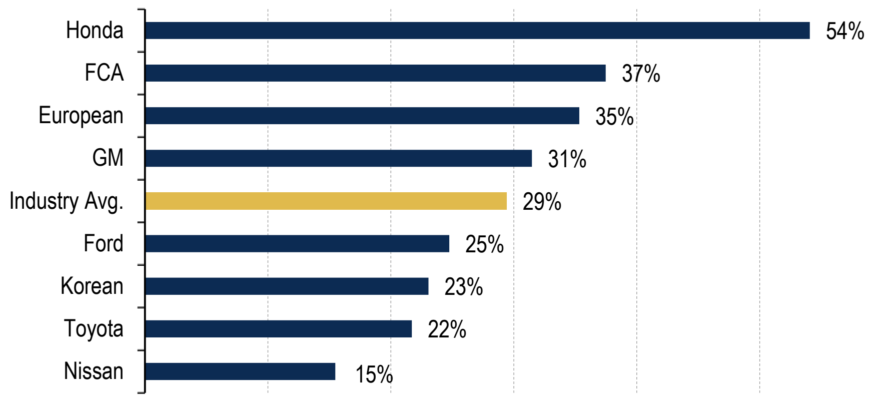
Source: BofA Merrill Lynch Global Research

Near-term dynamics imply potential volatility

The next two model years, 2017 and 2018, lead to different conclusions than our typical four year forecast window, and could result in some volatility for the following reasons:

- Honda's refresh rate is incredibly high due to important launches, including CR-V, Odyssey, and Accord.
- GM's refresh rate appears strong, but is even better given the onslaught of new Crossover models including the GMC Acadia, Terrain, Cadillac XT5, Chevrolet Traverse, Equinox, Buick Envision, and Envision.
- Ford's replacement rate appears low for MY2017&2018, which is the result of large volume programs in the last two years (F-150, Edge).
- Toyota had a relatively big MY2016 so MY2017 is subsequently soft, but its replacement rate accelerates meaningfully in MY2018 and beyond.
- Hyundai and Kia's replacement rate was strong in MY2015 & 2016, but fades dramatically in MY2017-19 and then re-accelerates somewhat in MY2020. In addition, a concentration in small car introductions may pressure market share.

Chart 11: 2-year cumulative replacement rates, % of 2015 CY volume replaced in MY17e-18e



Source: BofA Merrill Lynch Global Research

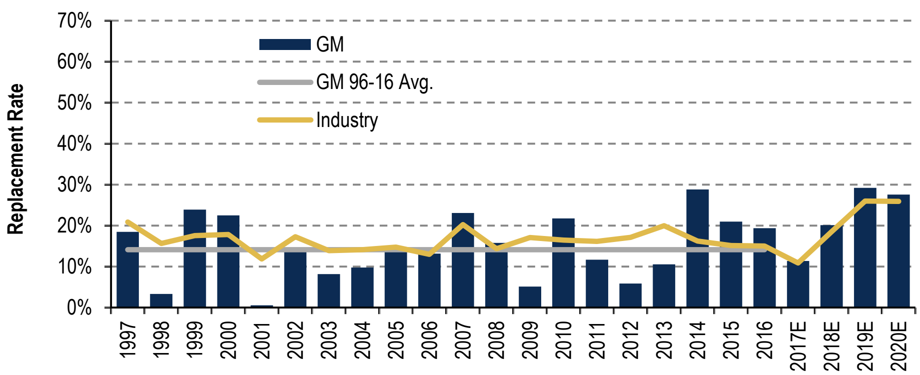
Company analysis

General Motors Company

Conclusion: We forecast GM's product cadence to remain solid in model years 2017-2020 as the company launches a dozen new CUVs and its next-gen trucks. There is a slight slow start in MY2017 and then there is a surge of product with all-important nameplates like the Chevrolet Traverse and Equinox in MY2018. There is further follow through in MY2019 with the all new Chevrolet Silverado and GMC Sierra and in MY2020 with the full slate of large SUVs. The acceleration of the truck launch by at least one year appears to be a response to competitive pressures. In total, we expect product activity to support market share and pricing proving the skeptics wrong.

GM's replacement rate should average about 88% over the next four years, which is above the industry average.

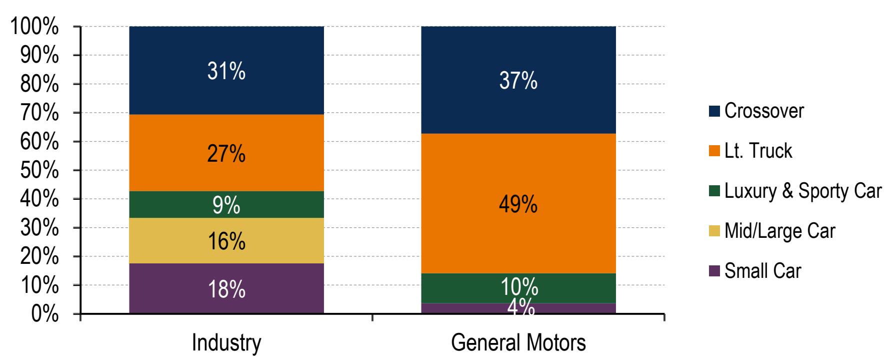
Chart 12: GM replacement rate vs. industry



Source: BofA Merrill Lynch Global Research

GM's launch mix is skewed toward trucks due to the acceleration of the large pickup launch in MY2019 and SUVs in 2020. However, prior to that, CUVs dominate new launches, including a dozen over the next four years.

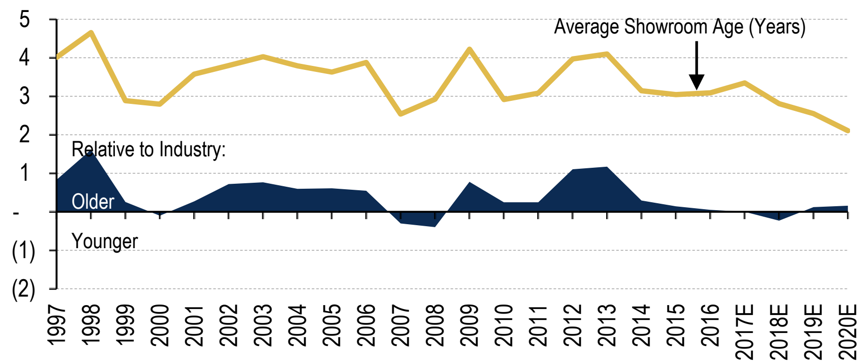
Chart 13: New model volume mix



Source: BofA Merrill Lynch Global Research

Relative showroom age hovers around the industry average as GM focuses on a more streamlined brand portfolio. This should bode well for market share and pricing at least through MY2020.

Chart 14: Average showroom age (years)



Source: BofA Merrill Lynch Global Research

Table 6: General Motors US product pipeline 2017e-20e

2017e	2018e	2019e	2020e
GMC Acadia - Mid CUV	Chevrolet Traverse - Mid CUV	Cadillac XT7 - Mid Lux CUV	Cadillac XT3 - Small Lux CUV
Cadillac XT5 - Small Lux CUV	Buick Enclave - Mid Lux CUV	Cadillac XT4 - Mid Lux CUV	GMC B-CUV - Small CUV
Buick Envision - Small Lux CUV	GMC Terrain - Small CUV	Buick Encore - Small Lux CUV	Chevrolet Silverado HD - Large Pickup
Buick LaCrosse - Sedan	Chevrolet Equinox - Small CUV	Chevrolet Silverado - Large Pickup	GMC Sierra HD - Large Pickup
Cadillac CT6 - Sedan	Buick Park Avenue - Sedan	GMC Sierra - Large Pickup	Chevrolet Tahoe - Large SUV
Buick Cascada - Convertible		Cadillac CT4 - Sedan	Chevrolet Suburban - Large SUV
Chevrolet Bolt - Hatchback		Chevrolet Corvette Zora - Coupe & Convertible	GMC Yukon - Large SUV
			GMC Yukon XL - Large SUV
			Cadillac Escalade - Large Lux SUV
			Chevrolet Sonic - Sedan & Hatchback
% of volume replaced : 11%	**% of volume replaced : 20%**	**% of volume replaced : 29%**	**% of volume replaced : 28%**

Source: BofA Merrill Lynch Global Research

Exhibit 1: 2017 GMC Acadia

Source: General Motors

Exhibit 2: 2017 Chevrolet Bolt

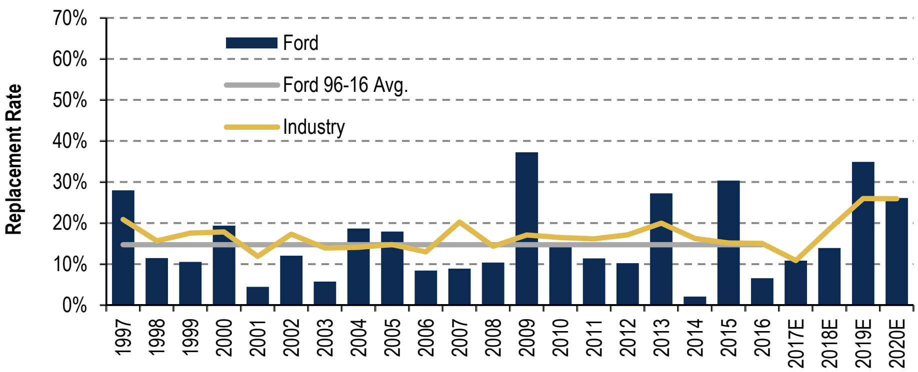
Source: General Motors

Ford Motor Company

Conclusion: Ford's product cadence is relatively robust with a concentration of truck and CUV launches that combined should sustain market share, mix, and price. Increasingly leveraging global platforms has enabled Ford to maintain a relatively consistent product cadence that should support share. However, as management remains focused on maximizing profit, market share may be traded for higher prices/profits.

Ford's estimated replacement rate for MY2017-20 is 86%, which is above the industry average of 81%.

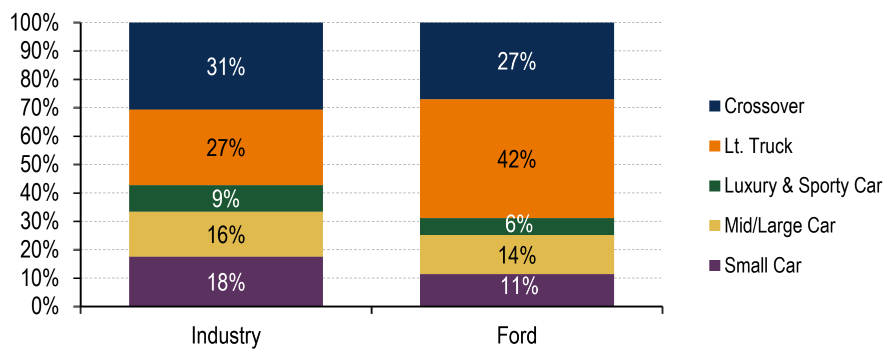
Chart 15: Replacement rate



Source: BofA Merrill Lynch Global Research

Ford's replacement is OK in MY 2017 and 2018, but accelerates meaningfully in MY2019-2020. In the first two years Ford is somewhat overweight cars, but in the last two there is an extreme shift towards CUVs and trucks that should drive materially improved mix.

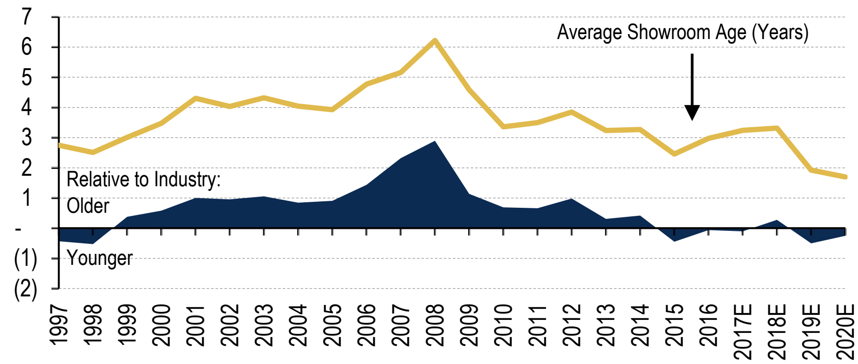
Chart 16: New model volume mix



Source: BofA Merrill Lynch Global Research

Ford's average age has dropped just below the industry average and should stay there at least through MY2020 as it simplifies its product cadence and leverages global platforms.

Chart 17: Average showroom age (years)



Source: BofA Merrill Lynch Global Research

Table 7: Ford US product pipeline 2017e-20e

2017e	2018e	2019e	2020e
F-Series Super Duty - Large Pickup Lincoln Continental - Sedan Ford GT - Coupe	Ford Expedition - Large SUV Lincoln Navigator - Large Lux SUV Lincoln MKA - Sedan Lincoln MKM - Coupe Ford Focus - Sedan Ford Fiesta - Sedan & Hatchback	Lincoln Aviator - Large Lux CUV Ford Explorer - Large CUV Ford Escape - Mid CUV Lincoln MKC - Small Lux CUV Ford C-Max - Small CUV Ford Ranger - Small Pickup Ford Taurus - Sedan Ford Fusion - Sedan	Ford EcoSport - Mid CUV Ford F-150 - Large Pickup Ford Transit Connect - Van Ford Bronco - Mid SUV Lincoln MKZ - Sedan
% of volume replaced : 11%	**% of volume replaced : 14%**	**% of volume replaced : 35%**	**% of volume replaced : 26%**

Source: BofA Merrill Lynch Global Research

Exhibit 3: 2017 Ford Super Duty

Source: Ford Motor Company

Exhibit 4: 2017 Lincoln Continental

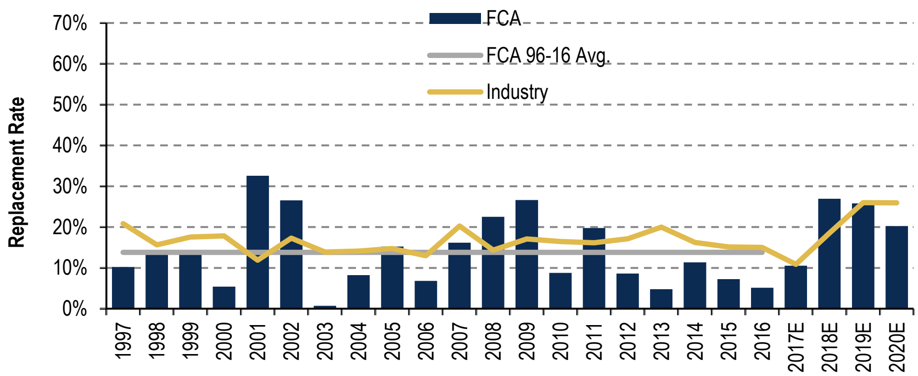
Source: Ford Motor Company

Fiat Chrysler Automobiles

Conclusion: FCA has relatively successfully worked through a lull in its product cadence, which should accelerate materially MY2017-20. If this is funded as planned, it should support market share and improve mix materially. The Pacifica (MY2017), Ram pickup (MY2018) and Wrangler (MY2018) launches skew mix toward Light Trucks. In addition, FCA is also over indexed to CUVs with 9 launches. This bodes well for mix for years to come.

FCA's average replacement rate over the next four model years is about 84%, which is above the industry average of 81%.

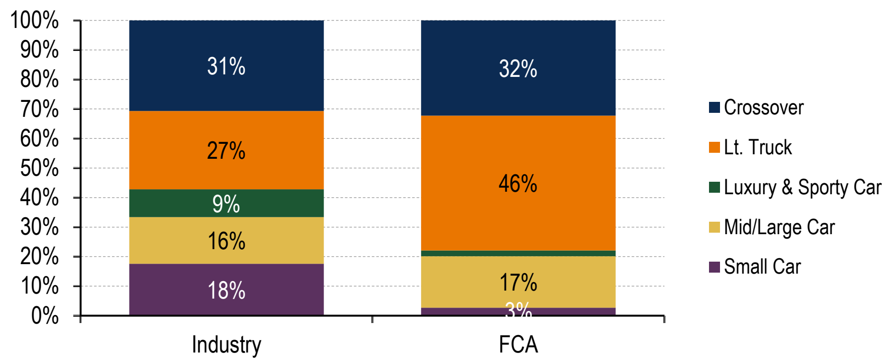
Chart 18: Replacement rate



Source: BofA Merrill Lynch Global Research

Not surprisingly, FCA's mix is skewed toward trucks as a result of the minivan launch in MY2017, as well as the Ram pickup and Wrangler in MY2018. Nine CUV launches spread across FCA's brands also drive a small overweight in CUVs while cars are becoming an afterthought.

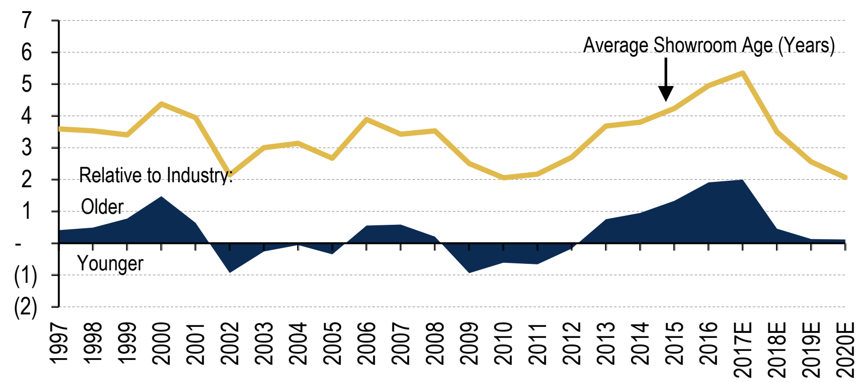
Chart 19: New model volume mix



Source: BofA Merrill Lynch Global Research

FCA's average showroom age is currently well above the industry average. However, with major launches in MY2017-18 it will drop much closer to the industry average at the end of our forecast window. This is a result of the replacement of older models like the Ram pickup, Wrangler, and minivans.

Chart 20: Average showroom age (years)



Source: BofA Merrill Lynch Global Research

Table 8: FCA US product pipeline 2017e-2020e

2017e	2018e	2019e	2020e
Alfa Romeo Stelvio - Mid CUV	Jeep Compatriot - Small CUV	Jeep Grand Wagoneer - Large CUV	Dodge Durango - Large CUV
Maserati Levante - Mid Lux CUV	Alfa Romeo Small CUV - Small CUV	Jeep Grand Cherokee - Large CUV	Jeep Cherokee - Mid CUV
Chrysler Pacifica - Minivan	Ram 1500 - Large Pickup	Chrysler E-CUV - Large CUV	Ram Full-Size SUV - Large SUV
Alfa Romeo Giulia - Sedan	Jeep Wrangler - Mid SUV	Ram 2500/3500 - Large Pickup	Alfa Romeo Spider - Coupe & Convertible
		Alfa Romeo Giulietta - Hatchback	Dodge Challenger - Coupe
		Chrysler 300 - Sedan	Dodge Charger - Coupe
		Chrysler 200 - Sedan	Fiat 500 - Hatchback
% of volume replaced : 11%	**% of volume replaced : 27%**	**% of volume replaced : 26%**	**% of volume replaced : 20%**

Source: BofA Merrill Lynch Global Research

Exhibit 5: 2018 Jeep Wrangler (2016 75th Anniversary Wrangler Unlimited shown)

Source: FCA US LLC

Exhibit 6: 2017 Chrysler Pacifica

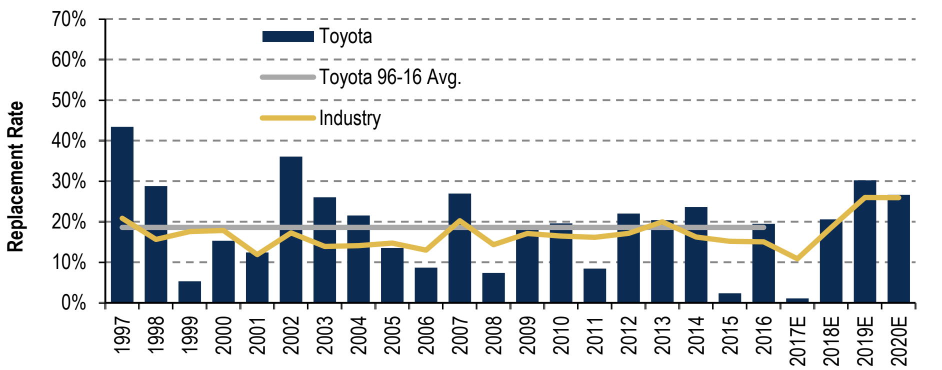
Source: FCA US LLC

Toyota Motor Corporation

Conclusion: Toyota on average is just below the industry average refresh rate, which combined with a new cadence that is a bit car heavy could put the company at some risk. However, with almost half its new introductions under the Lexus brand there is somewhat of an offset. In addition, high volume nameplates such as the Camry (MY18), RAV4 (MY19), Tundra (MY19), Corolla (MY20), and Highlander (MY20) should support market share,

Toyota's replacement should average about 79% over the next four years, which is just below the industry average of 81%.

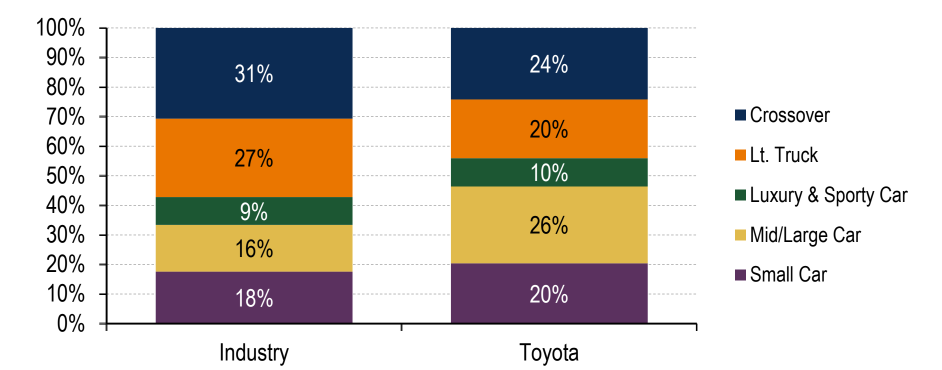
Chart 21: Replacement rate



Source: BofA Merrill Lynch Global Research

Toyota's new model mix is skewed toward mid/large cars over the next four years due to the launch of the Camry (MY2018) and Avalon (MY2019). It is also slightly over indexed to small cars because of the launch of the Corolla (MY2020) and Yaris (MY2019).

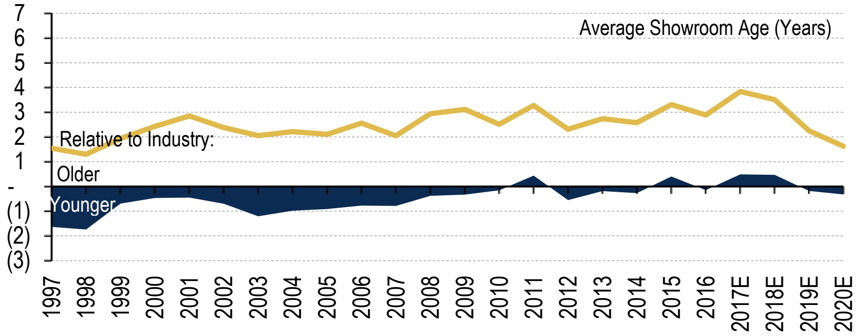
Chart 22: New model volume mix



Source: BofA Merrill Lynch Global Research

Toyota's strong historical cadence and consistency over the next four years should keep its average age around the increasingly competitive industry average.

Chart 23: Average showroom age (years)



Source: BofA Merrill Lynch Global Research

Table 9: Toyota product pipeline 2017e-20e

2017e	2018e	2019e	2020e
Toyota C-HR - Small CUV	Toyota 4Runner - Mid SUV	Toyota RAV4 - Small CUV	Toyota Highlander - Mid CUV
Lexus LC500 - Coupe	Lexus LS - Sedan	Toyota Tundra - Large Pickup	Lexus NX - Mid Lux CUV
	Toyota Camry - Sedan	Toyota Sienna - Minivan	Toyota Sequoia - Large SUV
		Lexus GX - Mid Lux SUV	Toyota Land Cruiser - Large SUV
		Lexus ES - Sedan	Lexus LX - Large Lux SUV
		Lexus CT - Hatchback	Lexus GS - Sedan
		Toyota Avalon - Sedan	Lexus IS - Coupe, Sedan & Convertible
		Toyota Yaris - Hatchback & Sedan	Toyota Corolla - Sedan
% of volume replaced : 1%	**% of volume replaced : 21%**	**% of volume replaced : 30%**	**% of volume replaced : 27%**

Source: BofA Merrill Lynch Global Research

Exhibit 7: 2017 Toyota C-HR

Source: Toyota Motor Sales, U.S.A., Inc.

Exhibit 8: 2018 Toyota Camry (Special Edition shown)

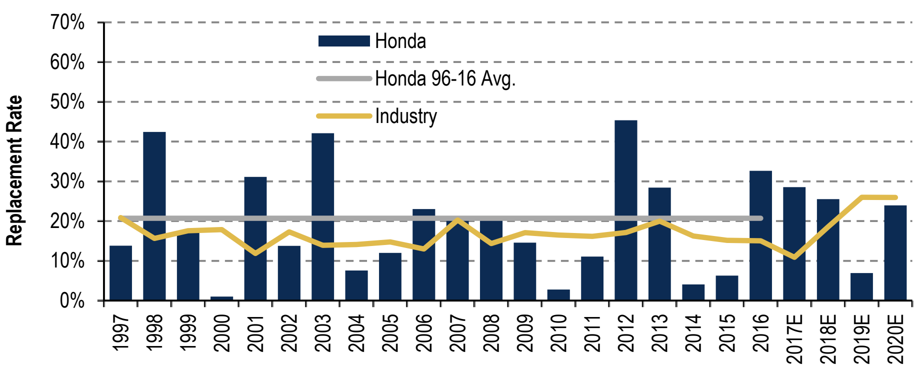
Source: Toyota Motor Sales, U.S.A., Inc.

Honda Motor Company

Conclusion: Honda retains one of the highest replacement rates over the next four years, which should at least support market share. Honda is still largely at the sweet spot in its product cycle, but the Civic was launched last year and will not likely re-appear as a new model again until 2021+. Honda's consistent focus on a well-planned-out, 4-5 year product redesign cycle on a simplified two-brand lineup sets it apart from most automakers.

Honda's average replacement rate of 85% over MY17-20 is above the industry average of 81%.

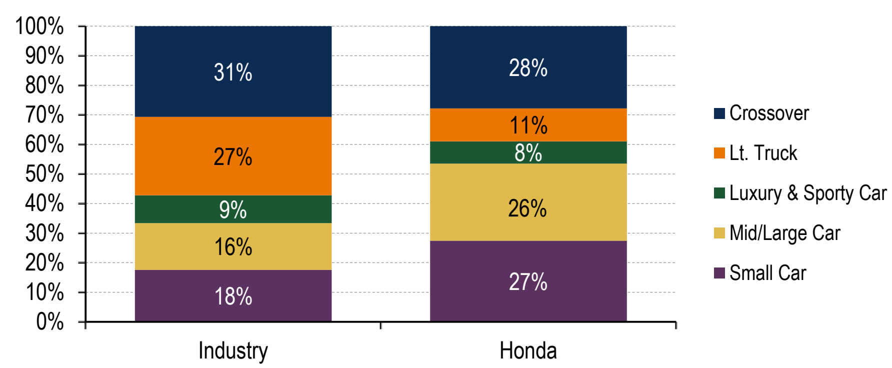
Chart 24: Replacement rate



Source: BofA Merrill Lynch Global Research

Honda's new product is skewed toward small and mid-size cars, compared to the richer, more truck-heavy industry mix, which could be a risk over the next four years.

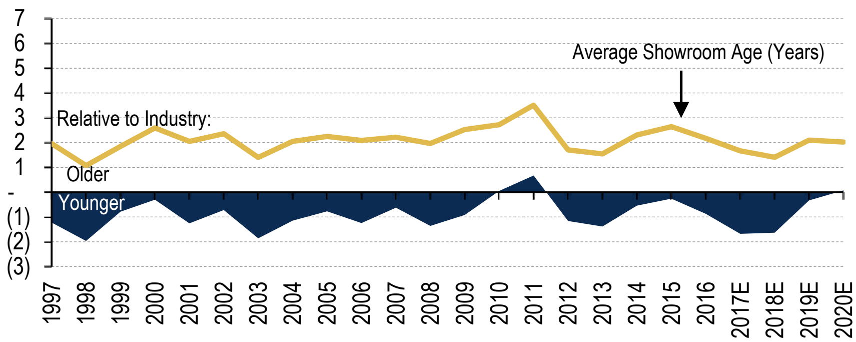
Chart 25: New model volume mix



Source: BofA Merrill Lynch Global Research

> Honda's focused product cadence keeps its showroom age one of the freshest in the industry.

Chart 26: Average showroom age (years)



Source: BofA Merrill Lynch Global Research

Table 10: Honda product pipeline 2017e-20e

2017e	2018e	2019e	2020e
Honda CR-V - Small CUV	Acura RDX - Small CUV	Acura MDX - Mid CUV	Acura ILX - Sedan
Honda Ridgeline - Small Pickup	Acura CDX - Compact CUV	Acura RLX - Sedan	Honda Civic - Hatchback, Coupe & Sedan
Honda Odyssey - Minivan	Honda Accord - Sedan & Coupe	Acura TLX - Coupe & Sedan	Honda Fit - Hatchback
Acura NSX - Coupe	Honda CR-Z - Hatchback	Honda Insight - Hatchback	
Honda Clarity - Coupe			
% of volume replaced : 29%	**% of volume replaced : 26%**	**% of volume replaced : 7%**	**% of volume replaced : 24%**

Source: BofA Merrill Lynch Global Research

Exhibit 9: 2017 Honda Ridgeline

Source: American Honda Motor Co., Inc.

Exhibit 10: 2017 Honda Odyssey (plug-in hybrid shown)

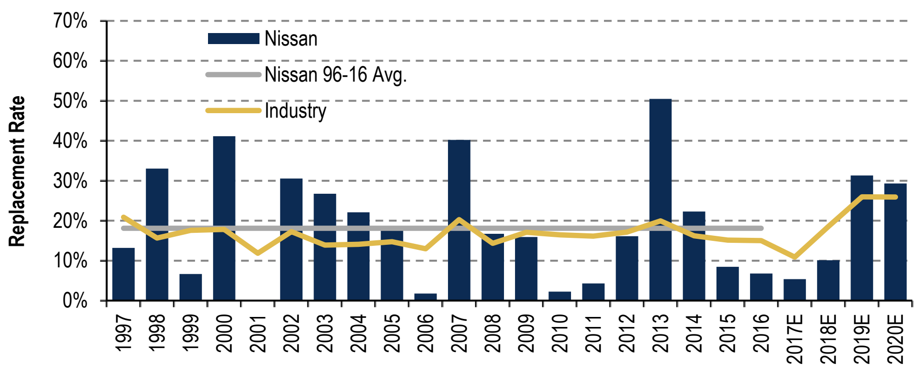
Source: American Honda Motor Co., Inc.

Nissan Motor Company

Conclusion: Nissan appears to be recovering to some degree from a lack of product direction, but still appears somewhat lost. Its replacement rate appears to accelerate in MY2019&2020, but in the interim it is at risk of ceding market share and/or pricing on its products.

Nissan is at risk of losing market share in MY2017-18 as its replacement rate lags the industry, but this may reverse in MY2019-20.

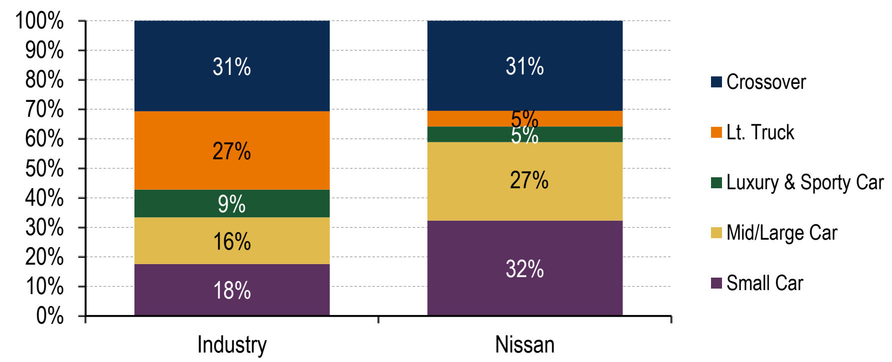
Chart 27: Replacement rate



Source: BofA Merrill Lynch Global Research

Nissan appears to be over indexed to small and mid/large cars, equal-weight CUVs, but underweight the profitable truck segment.

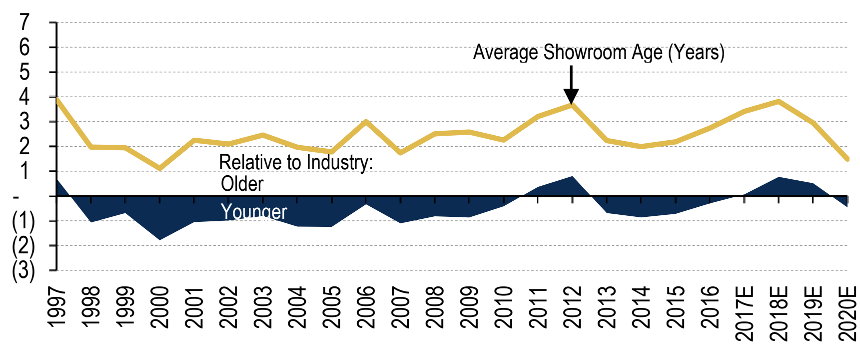
Chart 28: New model volume mix



Source: BofA Merrill Lynch Global Research

Nissan's average showroom age begins to trend just above average in MY2017, but dips below in MY2019&2020 with large launches such as the Altima, Rogue, and Sentra.

Chart 29: Average showroom age (years)



Source: BofA Merrill Lynch Global Research

Table 11: Nissan product pipeline 2017e-20e

2017e	2018e	2019e	2020e
Infiniti QX30 - Mid Lux CUV	Nissan Z - Coupe & Convertible	Nissan Pathfinder - Mid CUV	Infiniti QX80 - Large Lux SUV
Nissan Micra - Small CUV	Nissan Versa - Hatchback	Infiniti QX70 - Mid Lux CUV	Nissan Quest - Minivan
Nissan Armada - Large SUV	Nissan Cube - Hatchback	Infiniti QX60 - Mid Lux CUV	Nissan Rogue - Small CUV
Infiniti Q60 - Sedan		Nissan Juke - Small CUV	Infiniti Q50 - Coupe & Sedan
		Nissan NV200 - Small Van	Nissan GTR - Coupe
		Infiniti Q70 - Sedan	Nissan Sentra - Sedan
		Nissan Altima - Sedan & Coupe	Nissan Leaf - Hatchback
% of volume replaced : 5%	**% of volume replaced : 10%**	**% of volume replaced : 31%**	**% of volume replaced : 29%**

Source: BofA Merrill Lynch Global Research

Exhibit 11: 2017 Infiniti Q60

Source: Nissan North America, Inc.

Exhibit 12: 2017 Nissan Armada

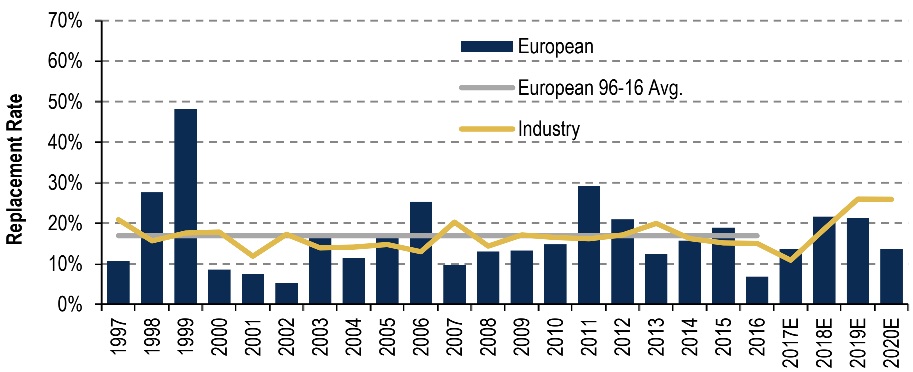
Source: Nissan North America, Inc.

European OEMs

Conclusion: We expect market share for European OEMs to slip slightly over the next four years, with an average replacement of 71%, which is below the industry average of 81%. It should be noted that VW is slightly better at about 80%, but with an extreme over indexing to cars (70%), it appears at risk of losing market share. The German luxury OEMs are mixed.

European OEM average replacement rates are about 70% over the next four years, below the industry average of 81%.

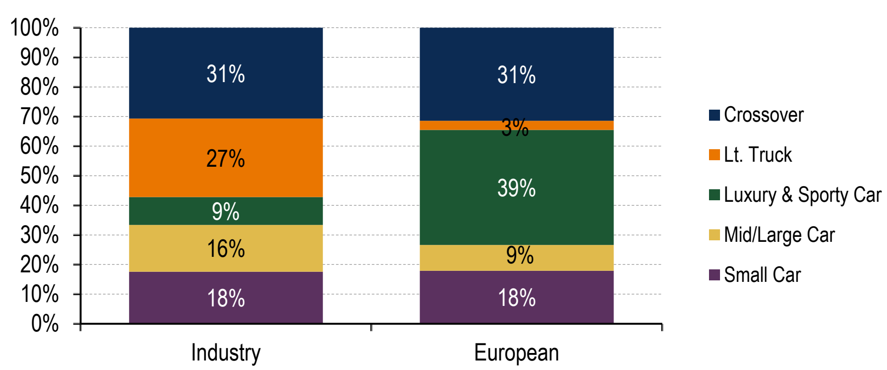
Chart 30: Replacement rate



Source: BofA Merrill Lynch Global Research

Numerous luxury brands such as Mercedes, BMW, Porsche, and Audi leads to a natural skew toward luxury cars, but there is also a very slight overweighting towards CUVs.

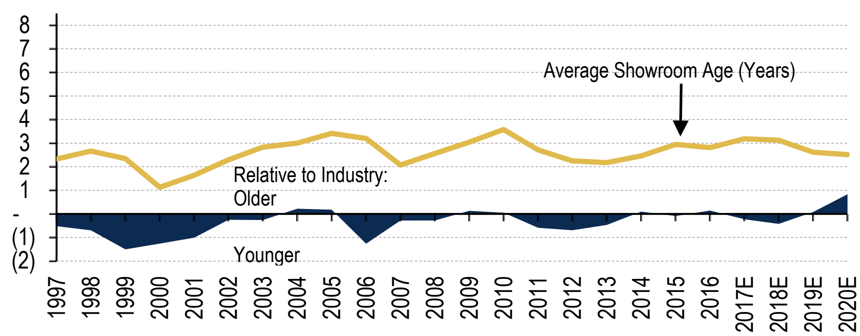
Chart 31: New model volume mix



Source: BofA Merrill Lynch Global Research

European OEMs have an average age of about 2.8 years over the next four years, which is just above the industry average of 2.7 years.

Chart 32: Average showroom age (years)



Source: BofA Merrill Lynch Global Research

Table 12: European OEM product pipeline 2017e-20e

2017e	2018e	2019e	2020e
Audi Q5 - Mid Lux CUV	Volkswagen Touareg - Mid CUV	Audi Q8 - Large Lux CUV	Mercedes-Benz GLS - Large Lux CUV
Audi Q2 - Compact Lux CUV	Volkswagen CrossBlue - Mid CUV	Audi Q6 - Mid Lux CUV	BMW X5 - Mid Lux CUV
Mercedes-Benz GLC - Small CUV	Porsche Cayenne - Mid Lux CUV	Mercedes-Benz GLE - Mid Lux CUV	Mercedes-Benz Sprinter - Van
Audi A5 - Coupe & Convertible	Volkswagen Tiguan - Small CUV	Audi Allroad - Small Lux CUV	Audi A3 - Sedan & Wagon
Audi A4 - Sedan	BMW X3 - Small Lux CUV	Mercedes-Benz ELC - Small Lux CUV	Mercedes-Benz SL - Convertible
Mercedes-Benz E-Class - Sedan	Audi A8 - Sedan	MINI Countryman - Small CUV	Mercedes-Benz CLA - Sedan
BMW 5-Series - Sedan	Audi A7 - Sedan	Audi Q4 - Compact Lux CUV	Porsche Pajun - Sedan
Porsche Panamera - Sedan	Audi A6 - Sedan	BMW X7 - Mid Lux SUV	Volkswagen Beetle - Hatchback & Convertible
	Mercedes-Benz CLS-Class - Sedan	Mercedes-Benz GT-4 - Sedan	
	Porsche Cayman - Coupe	BMW 6 Series - Coupe & Convertible	
	Porsche Boxter - Convertible	BMW 3 Series - Sedan	
	Volkswagen CC - Sedan	BMW Z4 - Convertible	
	Volkswagen Jetta - Sedan & Wagon	Porsche 911 - Coupe & Convertible	
		Volkswagen Passat - Sedan & Wagon	
% of volume replaced : 14%	**% of volume replaced : 22%**	**% of volume replaced : 21%**	**% of volume replaced : 14%**

Source: BofA Merrill Lynch Global Research

Exhibit 13: 2017 Audi Q2

Source: Audi of America

Exhibit 14: 2017 BMW 5 Series

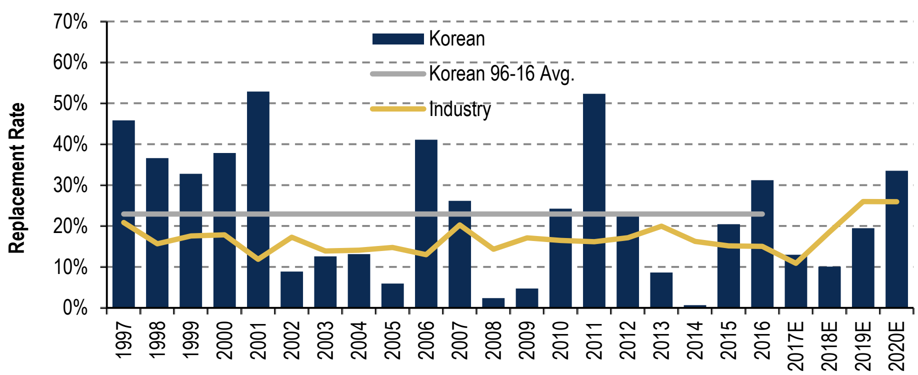
Source: BMW of North America LLC

Korean OEMs

Conclusion: Hyundai and Kia fade in MY2017&2018, but re-accelerate in MY2019&2020. However, a skew towards Small Cars and Mid/Large Cars creates more risk. In total, we forecast market share erosion over the next four years with risk to pricing.

> The average replacement rate of 76% over the next four years is below the industry average of 81%.

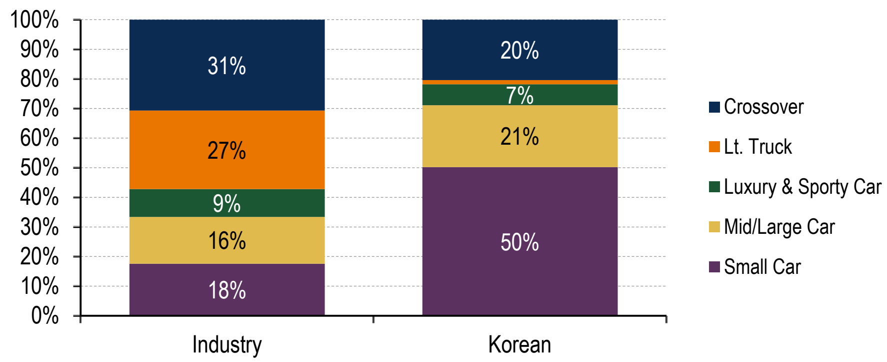
Chart 33: Replacement rate



Source: BofA Merrill Lynch Global Research

> Hyundai and Kia's mix is skewed heavily toward small cars and mid/large cars, which exacerbates market share risk as the market is structurally shifting towards CUVs and somewhat to trucks.

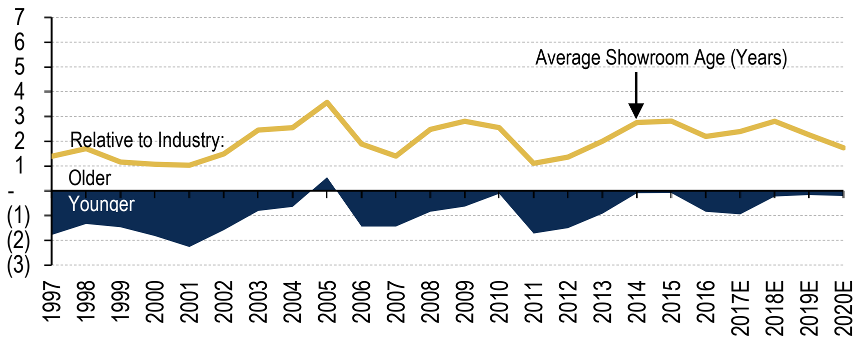
Chart 34: New model volume mix



Source: BofA Merrill Lynch Global Research

Average showroom age for Hyundai and Kia should continue to trend somewhat below the industry average, which may be somewhat of a mitigating factor.

Chart 35: Average showroom age (years)



Source: BofA Merrill Lynch Global Research

Table 13: Korean OEMs US product pipeline 2017e-20e

2017e	2018e	2019e	2020e
Kia Sportage - Small CUV	Genesis G70 - Sedan	Hyundai Santa Fe - Mid CUV	Genesis GV80 - Mid Lux CUV
Kia Niro - Compact CUV	Hyundai Azera - Sedan	Hyundai Santa Fe Sport - Mid CUV	Genesis G80 - Sedan
Genesis G90 - Sedan	Hyundai Accent - Sedan & Hatchback	Genesis GV90 - Mid Lux CUV	Hyundai Sonata - Sedan
Kia Cadenza - Sedan	Hyundai Veloster - Hatchback	Hyundai Santa Cruz - Small Pickup	Hyundai Elantra - Sedan
Kia Forte - Sedan	Kia Rio - Sedan & Hatchback	Kia Soul - Hatchback	
Hyundai Ioniq - Sedan			
% of volume replaced : 13%	**% of volume replaced : 10%**	**% of volume replaced : 19%**	**% of volume replaced : 34%**

Source: BofA Merrill Lynch Global Research

Exhibit 15: 2017 Genesis G90

Source: Hyundai Motor Company

Exhibit 16: 2017 Kia Sportage

Source: Kia Motors America, Inc.

Other OEMs

Table 14: Other OEMs US product pipeline 2017e-2020e

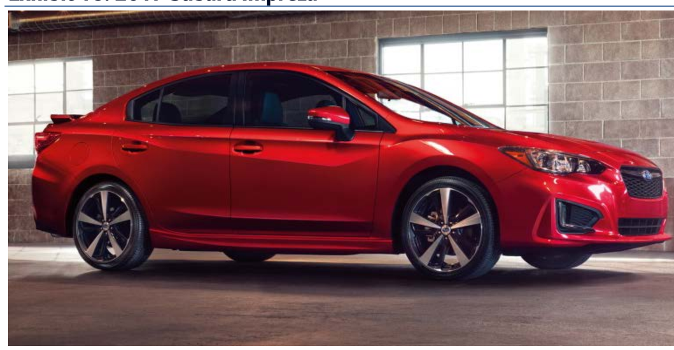
2017e	2018e	2019e	2020e
Land Rover Discovery - Mid Lux CUV	Subaru XV - Mid CUV	Jaguar I-Pace - Mid Lux CUV	Land Rover Defender - Mid Lux CUV
Jaguar F-Pace - Mid Lux CUV	Volvo XC60 - Small CUV	Subaru Crossover 7 - Mid CUV	Mazda CX-5 - Mid CUV
Jaguar XE - Coupe & Convertible	Jaguar E-Pace - Compact Lux CUV	Range Rover Evoque - Small Lux CUV	Mitsubishi Outlander - Small CUV
Volvo S90 - Sedan	Volvo V90 - Wagon	Volvo XC40 - Small CUV	Land Rover Range Rover - Large Lux SUV
Subaru Impreza - Coupe, Sedan & Wagon	Mitsubishi Lancer - Sedan	Subaru Forester - Small CUV	Mazda RX-7 - Coupe
	Tesla Model 3 - Sedan	Jaguar XJ - Coupe & Convertible	Tesla Model S - Sedan
		Subaru BRZ - Coupe	Volvo V40 - Wagon
		Volvo S60 - Sedan	Volvo S40 - Sedan
		Volvo V60 - Wagon	Subaru WRX - Wagon
		Mazda 5 - Wagon	Subaru Legacy - Wagon
			Mazda 3 - Sedan & Hatchback

Source: BofA Merrill Lynch Global Research

Exhibit 17: 2018 Tesla Model 3

Source: Tesla Motors

Exhibit 18: 2017 Subaru Impreza



Source: Subaru of America, Inc.

Exhibit 19: 2017 Volvo S90

Source: Volvo Car Corporation

Exhibit 20: 2017 Jaguar F-Pace

Source: Jaguar Land Rover North America, LLC

Implications for suppliers and dealers

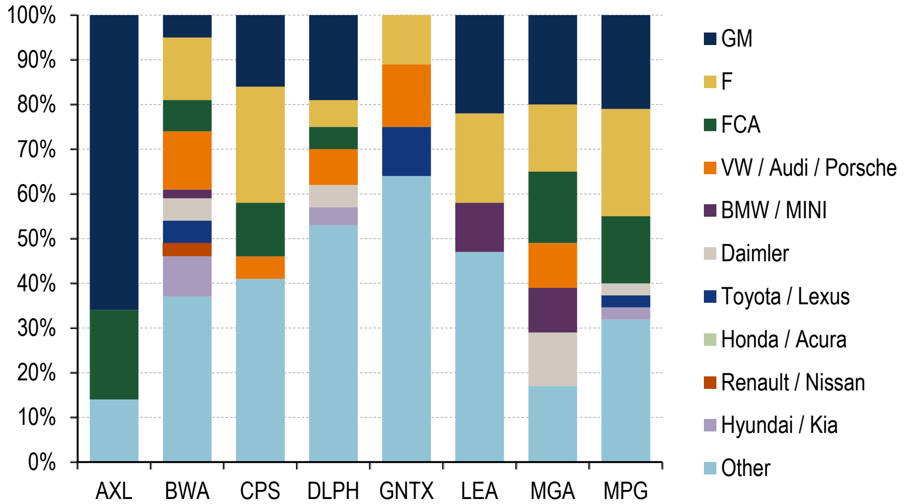
Implications for suppliers

Proprietary technology trumps all for suppliers, in our view, though exposure to profitable and growing OEMs is extremely important for their growth, profitability, and returns.

Proprietary technology trumps all for suppliers, in our view, though exposure to profitable and growing OEMs is extremely important for the growth, profitability, and returns of suppliers. Therefore, assuming all else equal, suppliers most exposed to OEMs with the highest replacement rates and lowest average age are at an advantage. At the highest level this is a positive sign for most Tier I suppliers, whose exposure is relatively diversified (Chart 36).

In addition, with an increasingly competitive OEM landscape and convergence of product cadence, OEMs will likely add content/features to vehicles in an attempt to differentiate their product. This should be a net positive for the suppliers we cover, most notably Delphi.

Chart 36: Supplier exposure to OEMs – 2015



Source: Company filings

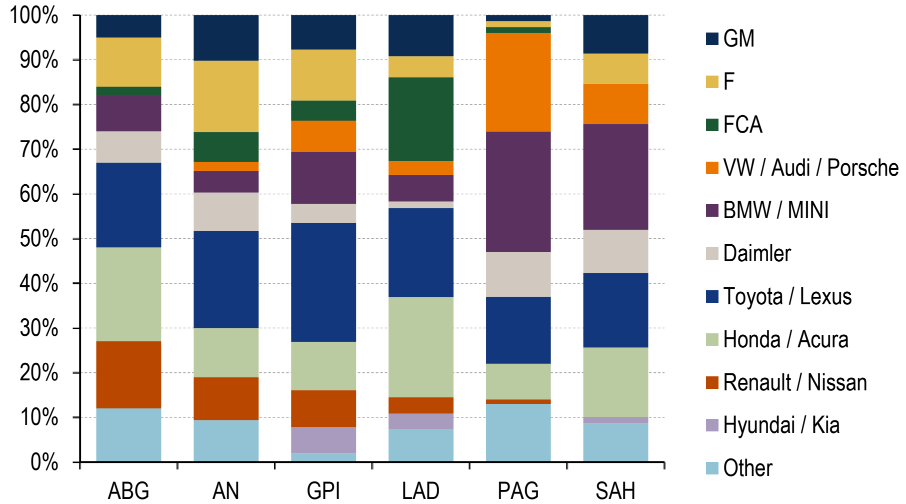
Implications for dealers

Similar to suppliers, and assuming all else equal, dealers that are most exposed to the OEMs with the highest replacement rates and lowest average age are best off.

Similar to suppliers, and assuming all else equal, dealers that are most exposed to the OEMs with the highest replacement rates and lowest average age are best off, in our view. This should translate into better new car sales and earnings growth in the short term, and, importantly, feeds into the recurring parts and service profit stream in the long term as units in operation grow. Chart 37 summarizes the public groups' new vehicle exposures by brand.

Once again, the convergence of product will drive OEMs to try and differentiate their product, which may also occur at the point of sale and increased focus on improving the ongoing customer relationship. This means that the successful dealer may become even more valuable than ever before to OEMs attempting to stand out in a crowded market.

Chart 37: Dealer exposure to OEMs – 2015



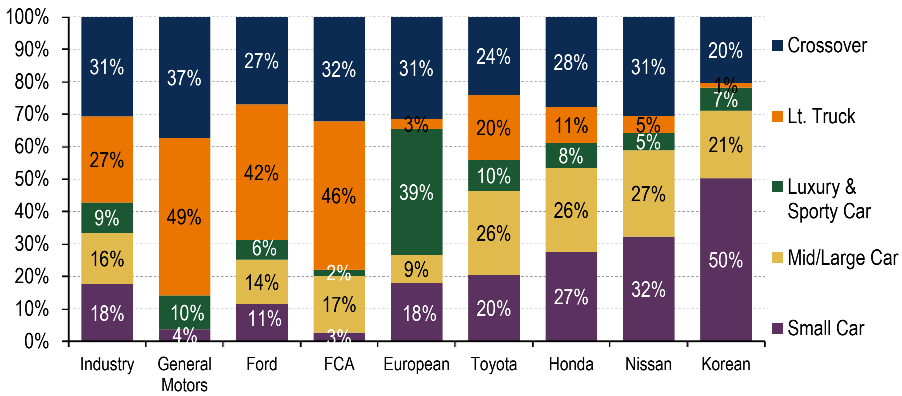
Source: Company filings

Appendix

Appendix

The mix of industry new model launches varies widely amongst manufacturers, but in total is skewed towards CUVs and trucks. This variation is a result of different points in product cycle cadence, but also in core product architecture competency.

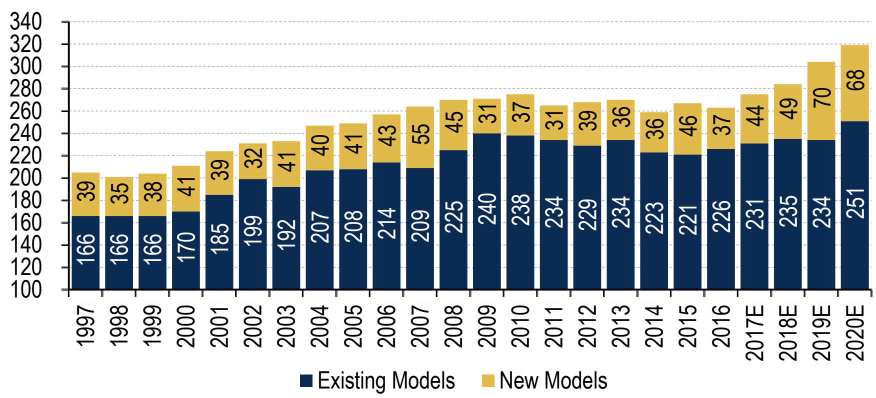
Chart 38: New model volume mix industry summary, 2017e-2020e model year



Source: BofA Merrill Lynch Global Research

New models continue to comprise a large portion of the total number of models offered in the US. However, a splintering of nameplates in the coming years is partially inflating the number of new model intros in out years.

Chart 39: Total number of models offered in the US market



Source: BofA Merrill Lynch Global Research

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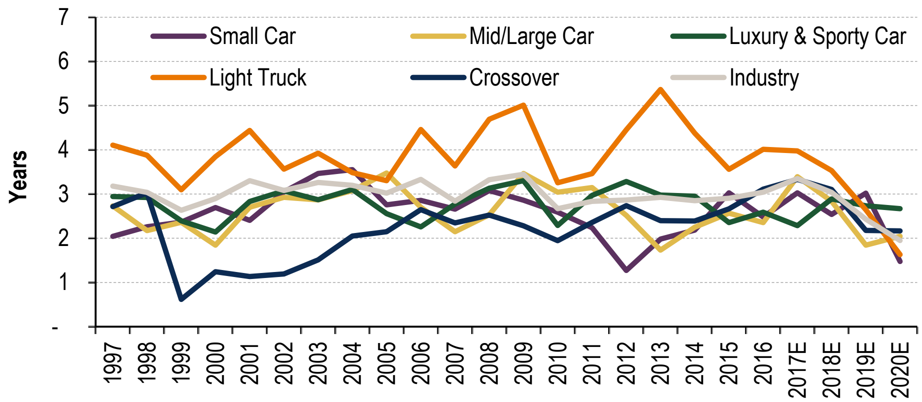
Even among the segments there is a general convergence around an average showroom age between two and three years.

Chart 40: Average showroom age by product segment



Source: BofA Merrill Lynch Global Research

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