

US Autos, Auto Parts, Tires, & Auto Auction

Presentation for 2018 "Summer Lunch Series"

Overweight: GM, F, APTV, AXL, BWA, CAR, CTB, CWH, GT, KAR, LKQ, MGA, and THRM

Neutral: RACE, ALV, CPRT, DAN, GNTX, HTZ, LEA, MTOR, TOWR, and VC

Underweight: TSLA and ADNT

Not Rated: TEN

US Autos – Equity

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J.P. Morgan Securities LLC

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Exhibit 17

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| | |
|---------------------------------|-------------------|
| UNITED STATES DISTRICT COURT | |
| NORTHERN DISTRICT OF CALIFORNIA | |
| Case Number: | 3:18-cv-04865-EMC |
| PLTF / DEFT | 17 |
| Exhibit No. | |
| Date Admitted: | |
| By: | |
| Angella Meuleman, Deputy Clerk | |

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Macro Update & Normalized US LV SAAR Analysis

Global Light Vehicle SAAR

| | SAAR (MM units) | | | | SAAR (MM units) | | | | Sales (000s units) | | |
|--------------|-----------------|--------|-------|---------------------|-----------------|--------|--------|-------|--------------------|--------|--------|
| | W. | | | Developed Market | | | | | BRIC Market | Canada | Mexico |
| | U.S. | Europe | Japan | | China | Brazil | Russia | India | | | |
| 2016 | | | | | | | | | | | |
| Jan | 17.6 | 13.9 | 4.7 | 36.3 | 25.6 | 1.8 | 1.4 | 3.0 | 31.8 | 108 | 120 |
| Feb | 17.5 | 14.1 | 4.7 | 36.3 | 23.9 | 2.2 | 1.6 | 3.0 | 30.8 | 119 | 111 |
| Mar | 16.8 | 14.3 | 4.6 | 35.6 | 26.4 | 2.2 | 1.5 | 3.1 | 33.1 | 175 | 117 |
| Apr | 17.5 | 13.2 | 5.0 | 35.7 | 25.3 | 1.9 | 1.4 | 3.4 | 32.0 | 200 | 118 |
| May | 17.2 | 14.1 | 4.7 | 36.0 | 26.7 | 2.0 | 1.3 | 3.2 | 33.3 | 194 | 121 |
| Jun | 17.0 | 13.9 | 4.7 | 35.6 | 26.8 | 2.0 | 1.4 | 3.3 | 33.5 | 191 | 134 |
| Jul | 17.8 | 13.4 | 4.7 | 35.9 | 28.1 | 2.0 | 1.2 | 3.8 | 35.0 | 173 | 132 |
| Aug | 17.1 | 13.9 | 5.1 | 36.1 | 29.6 | 2.1 | 1.3 | 3.7 | 36.8 | 172 | 134 |
| Sep | 17.6 | 14.5 | 5.0 | 37.1 | 30.8 | 1.8 | 1.4 | 3.7 | 37.8 | 173 | 131 |
| Oct | 17.8 | 13.4 | 5.0 | 36.2 | 31.0 | 1.8 | 1.5 | 3.6 | 37.8 | 154 | 137 |
| Nov | 17.6 | 14.0 | 5.3 | 36.9 | 31.1 | 2.1 | 1.6 | 3.3 | 38.0 | 160 | 154 |
| Dec | 18.1 | 14.5 | 5.5 | 38.1 | 29.8 | 2.0 | 1.5 | 3.3 | 36.5 | 125 | 192 |
| 2016 Average | 17.6 | 13.9 | 4.9 | 36.3 | 27.9 | 2.0 | 1.4 | 3.4 | 34.7 | 1,944 | 1,602 |
| 2017 | | | | | | | | | | | |
| Jan | 17.3 | 14.7 | 5.0 | 37.0 | 28.0 | 1.8 | 1.3 | 3.4 | 34.5 | 111 | 123 |
| Feb | 17.3 | 14.6 | 5.1 | 36.9 | 28.9 | 2.0 | 1.5 | 3.4 | 35.8 | 123 | 118 |
| Mar | 16.8 | 14.7 | 5.1 | 36.6 | 26.7 | 2.3 | 1.6 | 3.5 | 34.1 | 187 | 137 |
| Apr | 16.8 | 13.4 | 5.5 | 35.7 | 25.4 | 1.9 | 1.6 | 3.8 | 32.7 | 197 | 114 |
| May | 16.8 | 14.5 | 5.5 | 36.8 | 26.1 | 2.4 | 1.6 | 3.6 | 33.6 | 216 | 123 |
| Jun | 16.8 | 14.4 | 5.5 | 36.7 | 28.1 | 2.4 | 1.7 | 3.0 | 35.2 | 203 | 127 |
| Jul | 16.7 | 13.5 | 5.0 | 35.2 | 29.6 | 2.0 | 1.5 | 4.3 | 37.4 | 182 | 122 |
| Aug | 16.5 | 14.5 | 5.4 | 36.3 | 28.9 | 2.5 | 1.5 | 4.3 | 37.1 | 183 | 125 |
| Sep | 18.1 | 14.2 | 5.2 | 37.4 | 31.0 | 2.3 | 1.7 | 4.1 | 39.0 | 186 | 116 |
| Oct | 17.9 | 14.0 | 4.9 | 36.8 | 30.4 | 2.3 | 1.7 | 3.5 | 37.9 | 164 | 123 |
| Nov | 17.5 | 14.6 | 5.1 | 37.1 | 29.6 | 2.3 | 1.7 | 3.7 | 37.3 | 158 | 141 |
| Dec | 17.3 | 14.3 | 5.2 | 36.8 | 29.7 | 1.9 | 1.6 | 3.5 | 36.8 | 124 | 159 |
| 2017 Average | 17.1 | 14.3 | 5.2 | 36.6 | 28.5 | 2.2 | 1.6 | 3.7 | 36.0 | 2,034 | 1,529 |
| 2018 | | | | | | | | | | | |
| Jan | 17.1 | 15.3 | 5.1 | 37.5 | 28.5 | 2.2 | 1.7 | 3.9 | 36.3 | 117 | 109 |
| Feb | 16.9 | 14.9 | 5.0 | 36.9 | 28.2 | 2.3 | 1.9 | 3.8 | 36.2 | 125 | 109 |
| Mar | 17.2 | 14.1 | 5.0 | 36.3 | 28.9 | 2.4 | 1.9 | 3.9 | 37.1 | 187 | 118 |
| Apr | 17.2 | 14.4 | 5.6 | 37.2 | 30.7 | 2.7 | 1.8 | 4.2 | 39.4 | 191 | 109 |
| May | 17.2 | 14.8 | 5.4 | 37.5 | 30.0 | 2.4 | 1.9 | 4.4 | 38.6 | 215 | 114 |
| Jun | 17.2 | 14.6 | 5.2 | 37.0 | 28.9 | 2.4 | 1.8 | 4.1 | 37.3 | 200 | 120 |
| Jul | 16.7 | 14.7 | 5.1 | 36.5 | 28.4 | 2.4 | 1.6 | 4.2 | 36.6 | 177 | 114 |
| 2018 YTD | 17.1 | 14.7 | 5.2 | 37.0 | 29.1 | 2.4 | 1.8 | 4.1 | 37.4 | 1,212 | 794 |

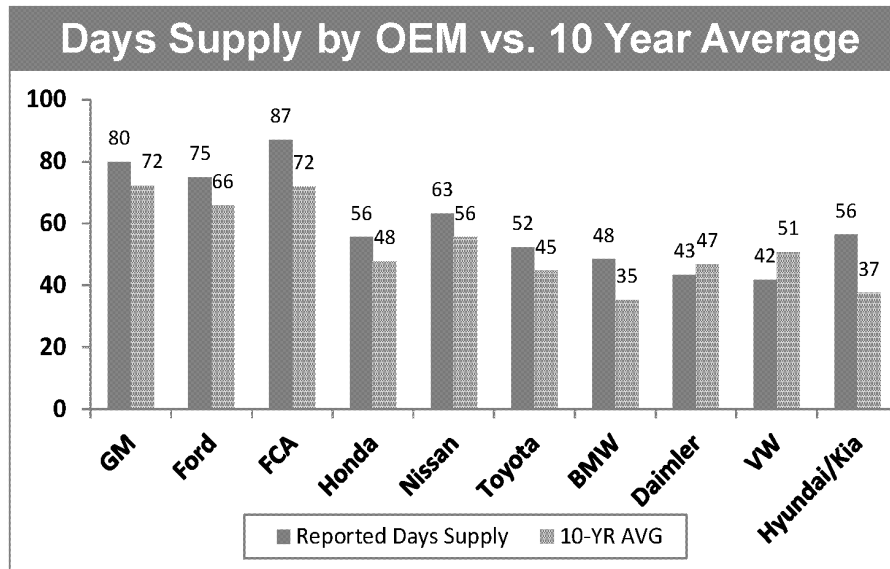
Source: Bureau of Economic Analysis, Ward's Auto, LMC Automotive and J.P. Morgan estimates. Italicized numbers are estimates.

Global Light Vehicle SAAR (Y/Y % Change)

| | SAAR | | | Developed | SAAR | | | | BRIC | Sales | |
|----------|------|-----------|-------|-----------|--------|-------|--------|--------|------|-------|--------|
| | U.S. | W. Europe | Japan | | Market | China | Brazil | Russia | | India | Market |
| 2016 | | | | | | | | | | | |
| Jan | 5% | 12% | -5% | 6% | 3% | -42% | -29% | -1% | -3% | 10% | 15% |
| Feb | 6% | 9% | -7% | 5% | -3% | -18% | -13% | 3% | -4% | 9% | 14% |
| Mar | -3% | 9% | -13% | 0% | 8% | -24% | -6% | 7% | 4% | 9% | 11% |
| Apr | 4% | 2% | 1% | 3% | 8% | -25% | -2% | 12% | 5% | 6% | 25% |
| May | -2% | 13% | -2% | 3% | 12% | -19% | -15% | 5% | 8% | -2% | 19% |
| Jun | -1% | 5% | -5% | 1% | 18% | -15% | -8% | 4% | 12% | 7% | 26% |
| Jul | 1% | 2% | 2% | 2% | 32% | -18% | -20% | 13% | 23% | -3% | 18% |
| Aug | -3% | 5% | 8% | 2% | 27% | -7% | -18% | 14% | 21% | -2% | 20% |
| Sep | -2% | 9% | 2% | 3% | 31% | -18% | -11% | 21% | 25% | -1% | 18% |
| Oct | -2% | 3% | 0% | 0% | 16% | -15% | -3% | 3% | 12% | -5% | 15% |
| Nov | -3% | 3% | 7% | 1% | 11% | -10% | 0% | -1% | 8% | 10% | 22% |
| Dec | 3% | 1% | 7% | 3% | 2% | -14% | -2% | -1% | 0% | -3% | 20% |
| FY2016 | 0% | 6% | 0% | 2% | 13% | -20% | -11% | 7% | 9% | 3% | 19% |
| 2017 | | | | | | | | | | | |
| Jan | -2% | 5% | 6% | 2% | 9% | 0% | -4% | 14% | 9% | 2% | 3% |
| Feb | -1% | 3% | 9% | 2% | 21% | -8% | -5% | 11% | 16% | 3% | 7% |
| Mar | 0% | 3% | 12% | 3% | 1% | 4% | 7% | 13% | 3% | 7% | 17% |
| Apr | -4% | 1% | 10% | 0% | 1% | -3% | 16% | 13% | 2% | -2% | -3% |
| May | -2% | 3% | 16% | 2% | -2% | 17% | 21% | 12% | 1% | 11% | 1% |
| Jun | -1% | 3% | 17% | 3% | 5% | 16% | 21% | -7% | 5% | 6% | -5% |
| Jul | -6% | 1% | 6% | -2% | 6% | 4% | 19% | 14% | 7% | 5% | -7% |
| Aug | -4% | 4% | 6% | 1% | -3% | 16% | 15% | 16% | 1% | 7% | -7% |
| Sep | 3% | -2% | 3% | 1% | 0% | 26% | 18% | 9% | 3% | 8% | -11% |
| Oct | 1% | 5% | -3% | 2% | -2% | 29% | 17% | -1% | 0% | 6% | -10% |
| Nov | 0% | 4% | -4% | 1% | -5% | 10% | 6% | 14% | -2% | -1% | -8% |
| Dec | -4% | -2% | -5% | -3% | 0% | -1% | 9% | 7% | 1% | -1% | -18% |
| FY2017 | 0% | 3% | 0% | 1% | 2% | 10% | 14% | 11% | 4% | -1% | -8% |
| 2018 | | | | | | | | | | | |
| Jan | -1% | 5% | 1% | 1% | 2% | 22% | 26% | 15% | 5% | 6% | -11% |
| Feb | -2% | 3% | -1% | 0% | -2% | 13% | 25% | 13% | 1% | 2% | -7% |
| Mar | 2% | -4% | -3% | -1% | 8% | 4% | 19% | 11% | 9% | 0% | -13% |
| Apr | 2% | 8% | 2% | 4% | 21% | 46% | 13% | 10% | 20% | -3% | -5% |
| May | 2% | 2% | -1% | 2% | 15% | 0% | 22% | 21% | 15% | -1% | -7% |
| Jun | 2% | 2% | -7% | 1% | 3% | 1% | 8% | 38% | 6% | -2% | -6% |
| Jul | 0% | 9% | 3% | 4% | -4% | 18% | 11% | -3% | -2% | -3% | -6% |
| 2018 YTD | 0% | 3% | 0% | 1% | 2% | 10% | 14% | 11% | 4% | -1% | -8% |

Source: Bureau of Economic Analysis, Ward's Auto, LMC Automotive and J.P. Morgan estimates.

US Dealer Inventories

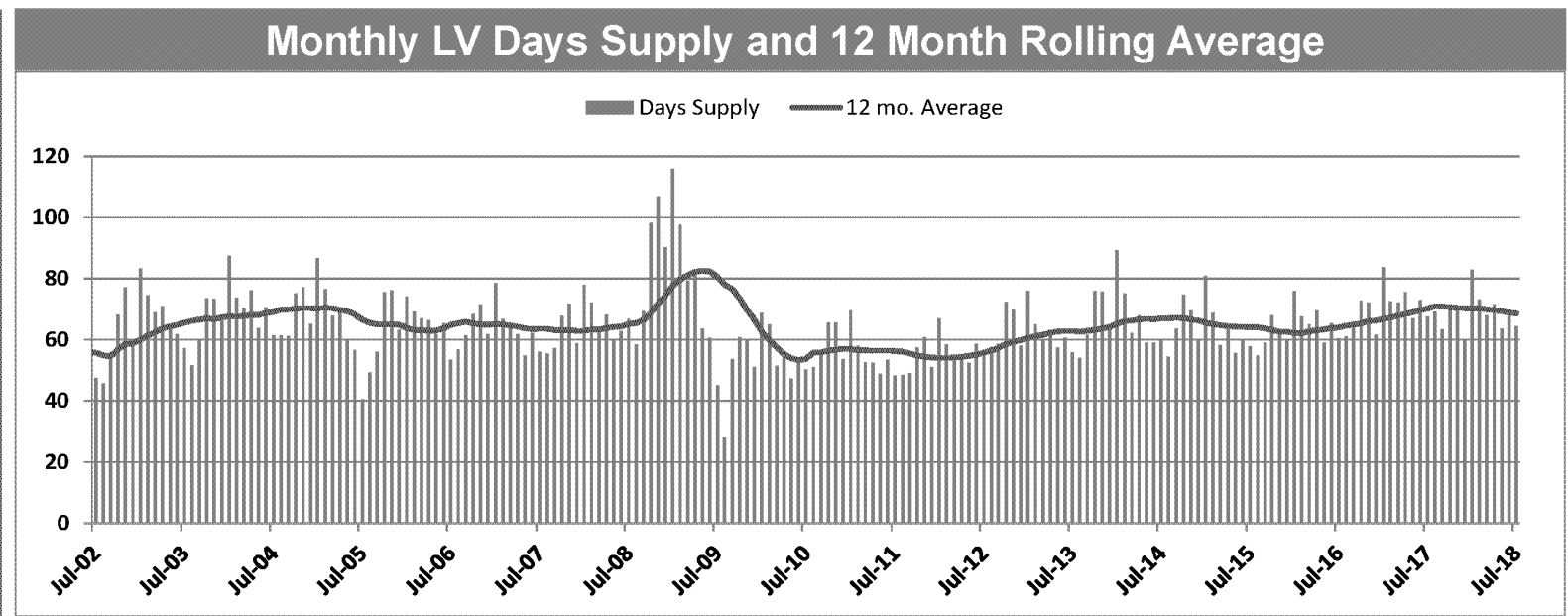


Source: Autodata and J.P Morgan.

| Inventories and Days Supply by OEM | | | | | |
|------------------------------------|--------------|--------------|--------------|--------------|------------------------|
| | Jul-17 | May-18 | Jun-18 | Jul-18 | Variance ('17 vs. '16) |
| Inventory ('000s) | | | | | |
| GM | 939 | 764 | 786 | 736 | -22% |
| Ford | 613 | 674 | 660 | 601 | -2% |
| FCA | 473 | 576 | 611 | 620 | 31% |
| Total D3 | 2,025 | 2,014 | 2,057 | 1,957 | -3% |
| Honda | 307 | 370 | 368 | 321 | 5% |
| Nissan | 341 | 296 | 286 | 286 | -16% |
| Toyota | 441 | 496 | 501 | 455 | 3% |
| Total J3 | 1,089 | 1,162 | 1,155 | 1,062 | -3% |
| BMW | 45 | 51 | 48 | 53 | 19% |
| Daimler | 52 | 55 | 53 | 42 | -20% |
| VW | 125 | 100 | 95 | 94 | -25% |
| European | 222 | 205 | 196 | 189 | -15% |
| Hyundai/Kia | 249 | 262 | 251 | 246 | -1% |
| Total Industry | 3,825 | 3,896 | 3,896 | 3,678 | -4% |
| Days Supply | | | | | |
| GM | 104 | 75 | 83 | 80 | -24 |
| Ford | 77 | 73 | 78 | 75 | -2 |
| FCA | 73 | 71 | 82 | 87 | 14 |
| Total D3 | 86 | 73 | 81 | 80 | -6 |
| Honda | 51 | 63 | 68 | 56 | 5 |
| Nissan | 66 | 58 | 53 | 63 | -3 |
| Toyota | 50 | 60 | 64 | 52 | 3 |
| Total J3 | 54 | 60 | 62 | 56 | 2 |
| BMW | 42 | 42 | 39 | 48 | 6 |
| Daimler | 45 | 47 | 49 | 43 | -2 |
| VW | 63 | 47 | 48 | 42 | -21 |
| European | 53 | 46 | 45 | 44 | -9 |
| Hyundai/Kia | 57 | 54 | 56 | 56 | -1 |
| Total Industry | 68 | 64 | 68 | 64 | -3 |

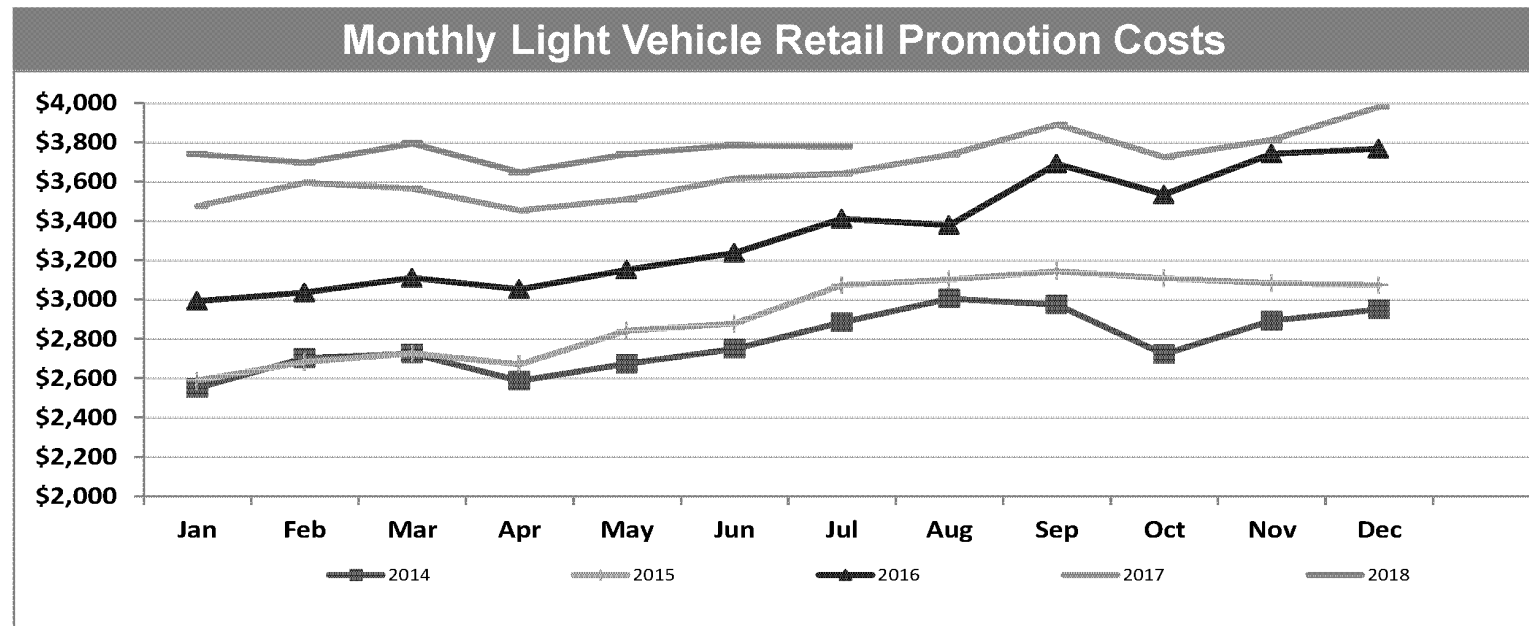
Source: Autodata and J.P Morgan.

US Dealer Inventories



Source: Autodata.

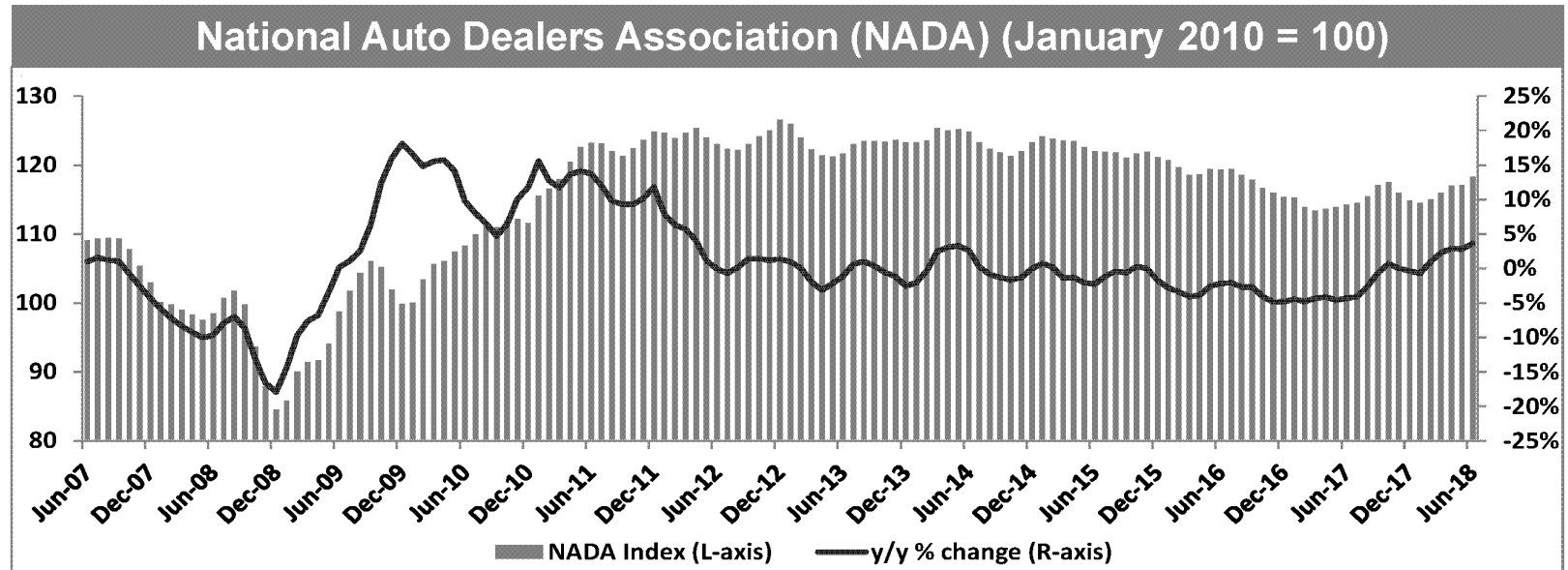
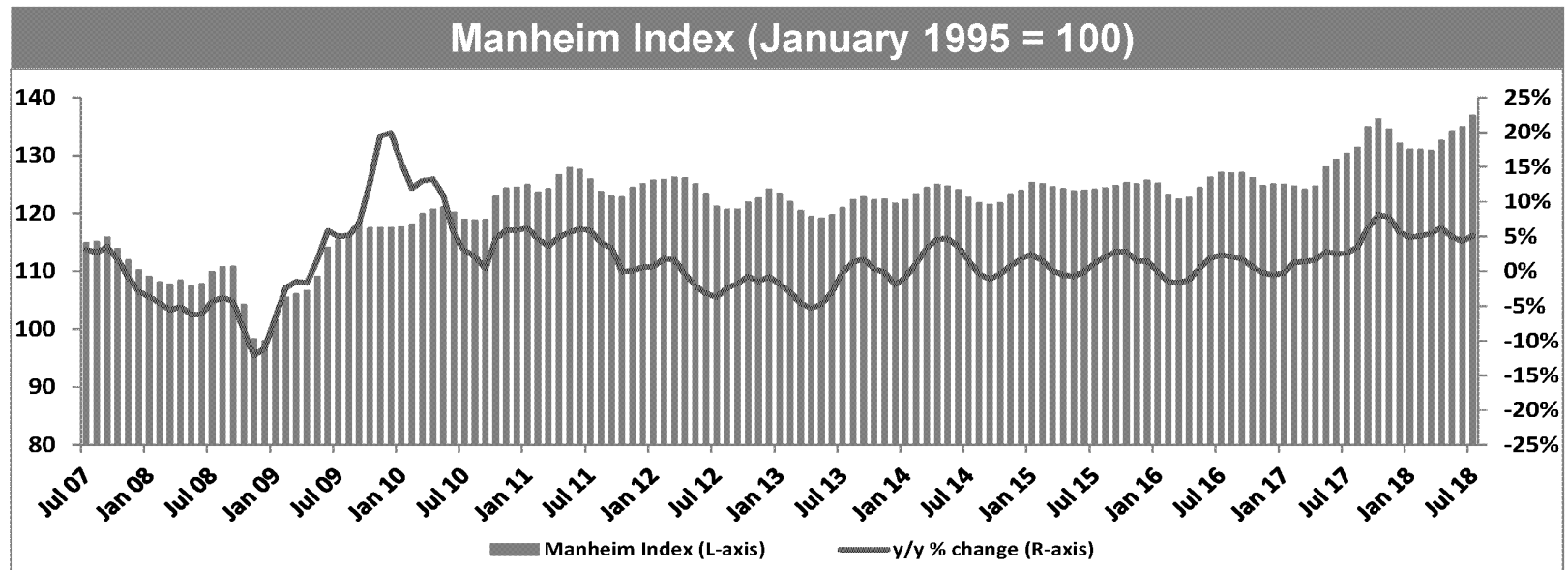
US Retail Incentives



| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Avg. | % Y/Y |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------|
| 2009 | \$2,691 | \$2,993 | \$3,116 | \$2,928 | \$2,873 | \$2,828 | \$2,737 | \$2,548 | \$2,743 | \$2,658 | \$2,694 | \$2,633 | \$2,776 | -0.6% |
| 2010 | \$2,545 | \$2,723 | \$2,804 | \$2,702 | \$2,829 | \$2,873 | \$2,852 | \$2,778 | \$2,743 | \$2,556 | \$2,551 | \$2,645 | \$2,718 | -2.1% |
| 2011 | \$2,579 | \$2,578 | \$2,484 | \$2,320 | \$2,303 | \$2,403 | \$2,587 | \$2,615 | \$2,653 | \$2,452 | \$2,605 | \$2,675 | \$2,520 | -7.3% |
| 2012 | \$2,435 | \$2,487 | \$2,547 | \$2,428 | \$2,545 | \$2,548 | \$2,482 | \$2,478 | \$2,405 | \$2,301 | \$2,497 | \$2,570 | \$2,484 | -1.4% |
| 2013 | \$2,345 | \$2,502 | \$2,573 | \$2,533 | \$2,664 | \$2,697 | \$2,550 | \$2,511 | \$2,478 | \$2,574 | \$2,667 | \$2,739 | \$2,576 | 3.7% |
| 2014 | \$2,550 | \$2,702 | \$2,725 | \$2,587 | \$2,673 | \$2,749 | \$2,883 | \$3,004 | \$2,974 | \$2,721 | \$2,892 | \$2,950 | \$2,791 | 8.4% |
| 2015 | \$2,588 | \$2,682 | \$2,726 | \$2,671 | \$2,842 | \$2,877 | \$3,073 | \$3,102 | \$3,144 | \$3,108 | \$3,083 | \$3,073 | \$2,923 | 4.7% |
| 2016 | \$2,992 | \$3,035 | \$3,110 | \$3,052 | \$3,151 | \$3,237 | \$3,410 | \$3,378 | \$3,690 | \$3,533 | \$3,741 | \$3,766 | \$3,348 | 14.5% |
| 2017 | \$3,475 | \$3,594 | \$3,563 | \$3,452 | \$3,509 | \$3,616 | \$3,640 | \$3,736 | \$3,889 | \$3,724 | \$3,811 | \$3,980 | \$3,672 | 9.7% |
| 2018 | \$3,740 | \$3,695 | \$3,794 | \$3,646 | \$3,740 | \$3,785 | \$3,776 | | | | | | | 1.9% |
| vs. prior mo. | -6.0% | -1.2% | 2.7% | -3.9% | 2.6% | 1.2% | -0.2% | | | | | | | |
| vs. prior yr. | 7.6% | 2.8% | 6.5% | 5.6% | 6.6% | 4.7% | 3.7% | | | | | | | |

Source: Autodata.

US Used Car Prices

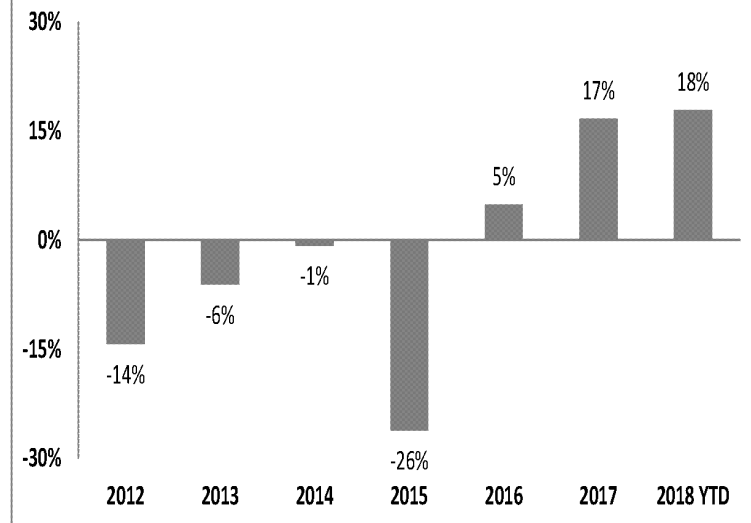


Key Commodities in a Vehicle

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Avg | vs. Yr Ago Avg |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|
| Hot Rolled Steel¹ (US dollars/ short ton) | | | | | | | | | | | | | | |
| 2016 | 350 | 355 | 390 | 490 | 550 | 535 | 515 | 505 | 480 | 450 | 540 | 598 | 480 | 20% |
| 2017 | 580 | 585 | 589 | 611 | 581 | 539 | 573 | 582 | 582 | 559 | 564 | 584 | 577 | 20% |
| 2018 | 617 | 687 | 786 | 807 | 822 | 835 | 857 | | | | | | 773 | 34% |
| vs. prior mo. | 6% | 11% | 14% | 3% | 2% | 2% | 3% | | | | | | | |
| Cold Rolled Steel¹ (US dollars/ short ton) | | | | | | | | | | | | | | |
| 2016 | 420 | 475 | 530 | 705 | 680 | 660 | 625 | 605 | 585 | 600 | 718 | 713 | 610 | 25% |
| 2017 | 695 | 702 | 710 | 726 | 702 | 675 | 683 | 692 | 697 | 679 | 669 | 687 | 693 | 14% |
| 2018 | 711 | 734 | 809 | 854 | 869 | 860 | 862 | | | | | | 814 | 17% |
| vs. prior mo. | 4% | 3% | 10% | 6% | 2% | -1% | 0% | | | | | | | |
| Aluminum² (US dollars/ Metric ton) | | | | | | | | | | | | | | |
| 2016 | 1,535 | 1,559 | 1,572 | 1,549 | 1,536 | 1,530 | 1,547 | 1,579 | 1,569 | 1,571 | 1,559 | 1,546 | 1,554 | -9% |
| 2017 | 1,590 | 1,636 | 1,695 | 1,697 | 1,645 | 1,626 | 1,627 | 1,815 | 1,775 | 1,915 | 1,870 | 1,806 | 1,725 | 11% |
| 2018 | 1,870 | 1,861 | 1,805 | 1,920 | 1,850 | 1,724 | 1,770 | | | | | | 1,828 | 6% |
| vs. prior mo. | 4% | -1% | -3% | 6% | -4% | -7% | 3% | | | | | | | |
| Stainless Steel³ (US dollars/Metric ton) | | | | | | | | | | | | | | |
| 2016 | 1,738 | 1,742 | 2,080 | 2,427 | 2,630 | 2,678 | 2,578 | 2,405 | 2,149 | 2,132 | 2,435 | 2,743 | 2,311 | 17% |
| 2017 | 2,678 | 2,607 | 2,603 | 2,642 | 2,549 | 2,489 | 2,258 | 2,283 | 2,435 | 2,689 | 2,559 | 2,636 | 2,536 | 10% |
| 2018 | 2,533 | 2,652 | 2,767 | 2,995 | 3,004 | 3,046 | 3,149 | | | | | | 2,878 | 14% |
| vs. prior mo. | -4% | 5% | 4% | 8% | 0% | 1% | 3% | | | | | | | |
| Natural Rubber Price⁴ (US cents/pound) | | | | | | | | | | | | | | |
| 2016 | 49 | 52 | 60 | 69 | 57 | 59 | 58 | 58 | 63 | 68 | 80 | 92 | 64 | 3% |
| 2017 | 109 | 94 | 84 | 74 | 66 | 72 | 69 | 73 | 67 | 66 | 68 | 65 | 76 | 18% |
| 2018 | 68 | 68 | 63 | 65 | 68 | 62 | 60 | | | | | | 65 | -14% |
| vs. prior mo. | 5% | 0% | -7% | 2% | 6% | -9% | -3% | | | | | | | |
| Synthetic Rubber Price⁵ (US dollars/Metric ton) | | | | | | | | | | | | | | |
| 2016 | 914 | 869 | 869 | 945 | 976 | 1,006 | 1,006 | 1,022 | 1,088 | 1,134 | 1,202 | 1,202 | 1,019 | -20% |
| 2017 | 1,340 | 1,716 | 2,022 | 1,808 | 1,455 | 1,409 | 1,210 | 1,149 | 1,180 | 1,302 | 1,226 | 1,191 | 1,417 | 39% |
| 2018 | 1,210 | 1,256 | 1,409 | 1,455 | 1,502 | 1,563 | 1,551 | | | | | | 1,421 | 0% |
| vs. prior mo. | 2% | 4% | 12% | 3% | 3% | 4% | -1% | | | | | | | |
| Polypropylene⁶ (Cents/Pound) | | | | | | | | | | | | | | |
| 2016 | 67 | 67 | 67 | 64 | 59 | 54 | 55 | 60 | 64 | 61 | 54 | 53 | 61 | -6% |
| 2017 | 63 | 69 | 72 | 64 | 58 | 58 | 59 | 61 | 67 | 69 | 69 | 71 | 65 | 7% |
| 2018 | 77 | 73 | 75 | 76 | 81 | 76 | 75 | | | | | | 76 | 17% |
| vs. prior mo. | 8% | -6% | 4% | 1% | 6% | -6% | -1% | | | | | | | |
| Copper² (US dollars/ Metric ton) | | | | | | | | | | | | | | |
| 2016 | 4,570 | 4,706 | 4,881 | 5,064 | 4,697 | 4,840 | 4,915 | 4,595 | 4,848 | 4,841 | 5,813 | 5,523 | 4,941 | -10% |
| 2017 | 5,994 | 5,967 | 5,816 | 5,711 | 5,658 | 5,927 | 6,336 | 6,760 | 6,432 | 6,839 | 6,735 | 7,207 | 6,282 | 27% |
| 2018 | 7,079 | 6,895 | 6,679 | 6,770 | 6,845 | 6,625 | 6,279 | | | | | | 6,739 | 7% |
| vs. prior mo. | -2% | -3% | -3% | 1% | 1% | -3% | -5% | | | | | | | |
| Lead² (US dollars/ Metric ton) | | | | | | | | | | | | | | |
| 2016 | 1,721 | 1,755 | 1,697 | 1,806 | 1,696 | 1,785 | 1,813 | 1,869 | 2,121 | 2,049 | 2,351 | 2,000 | 1,888 | 6% |
| 2017 | 2,371 | 2,254 | 2,331 | 2,284 | 2,099 | 2,273 | 2,308 | 2,368 | 2,492 | 2,398 | 2,471 | 2,485 | 2,344 | 24% |
| 2018 | 2,621 | 2,496 | 2,395 | 2,321 | 2,446 | 2,405 | 2,141 | | | | | | 2,403 | 3% |
| vs. prior mo. | 5% | -5% | -4% | -3% | 5% | -2% | -11% | | | | | | | |
| Weighted Commodity Index* (US dollars/Metric ton) | | | | | | | | | | | | | | |
| 2016 | 1,202 | 1,229 | 1,306 | 1,467 | 1,491 | 1,465 | 1,438 | 1,428 | 1,418 | 1,387 | 1,538 | 1,599 | 1,414 | 5% |
| 2017 | 1,653 | 1,681 | 1,706 | 1,687 | 1,594 | 1,553 | 1,581 | 1,641 | 1,653 | 1,677 | 1,667 | 1,701 | 1,650 | 17% |
| 2018 | 1,766 | 1,824 | 1,941 | 2,007 | 2,040 | 2,008 | 2,024 | | | | | | 1,944 | 18% |
| vs. prior mo. | 4% | 3% | 6% | 3% | 2% | -2% | 1% | | | | | | | |

Source: Bloomberg, CMAI, CRU Monitor and J.P. Morgan estimates.

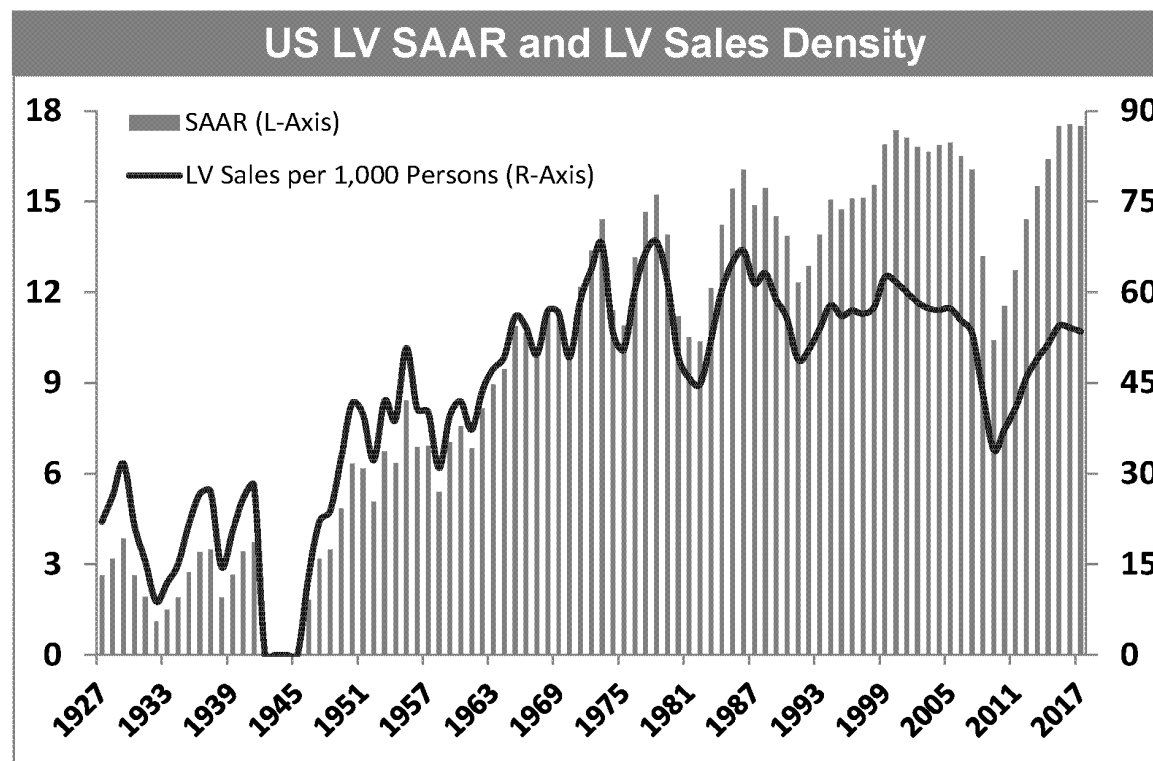
Weighted Commodity Index Y/Y Change



North America Demand Outlook: Sales per Capita Analysis

Implies ~16.4-17.9 mn SAAR

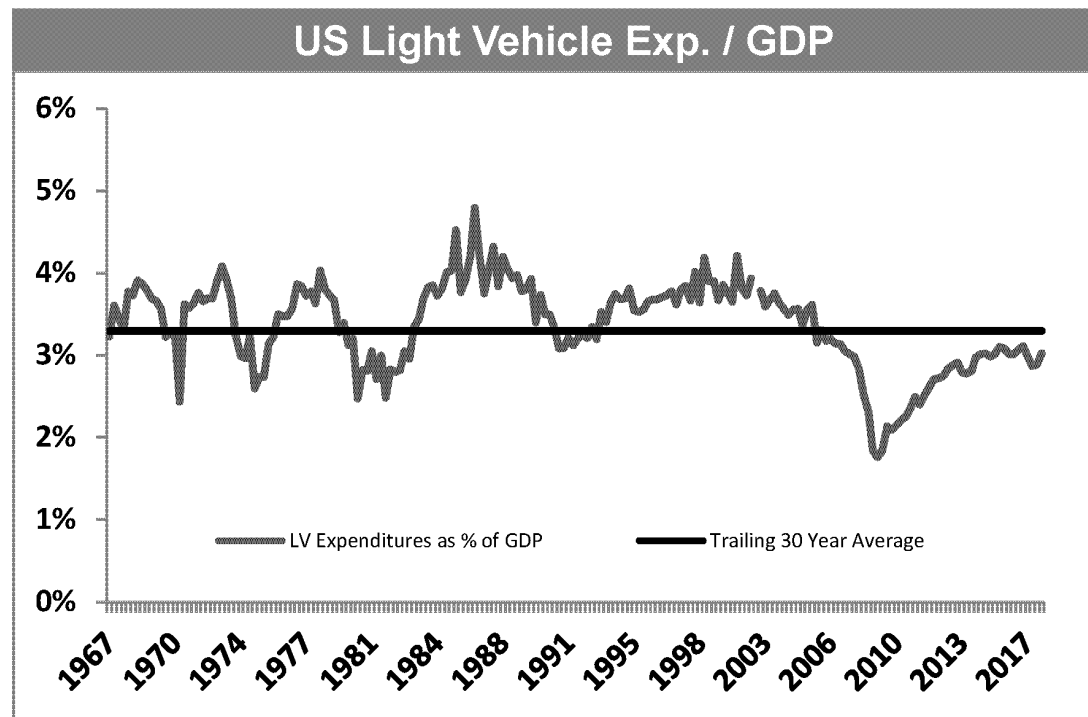
- **Returning to 1950-2007 averages in terms of car sales per person suggests 16.43 mn US LV SAAR.**
 - US averaged 53.0 sales per thousand people from 1950-2007
 - $(310 \text{ mn people} / 1,000) * .0530 = 16.430 \text{ mn US LV SAAR}$
- **Returning to 1998-2007 averages in terms of car sales per person suggests 17.92 mn US LV SAAR.**
 - US averaged 57.8 sales per thousand people from 1998-2007
 - $(310 \text{ mn people} / 1,000) * .0578 = 17.918 \text{ mn US LV SAAR}$



Source: Bureau of Economic Analysis,

North America Demand Outlook: GDP Analysis Implies ~18.0 mn SAAR

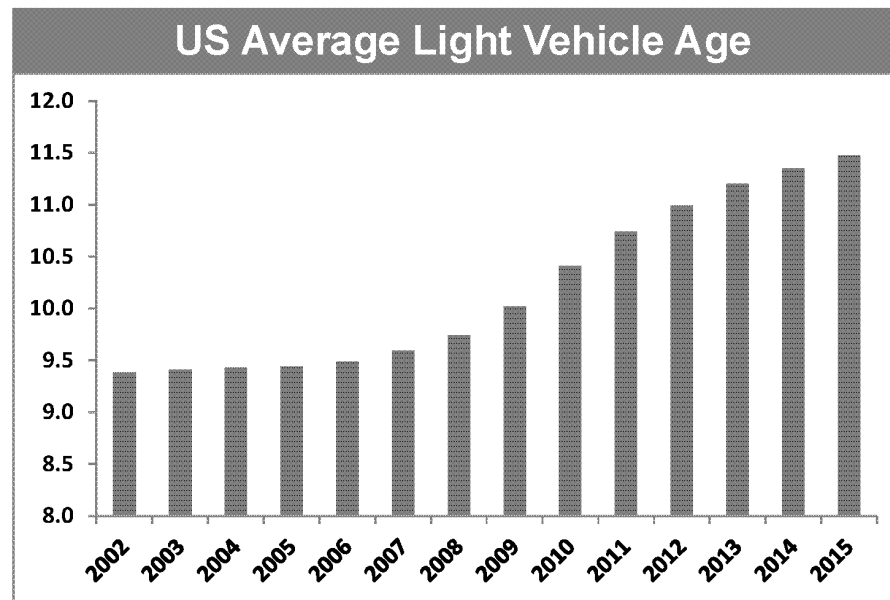
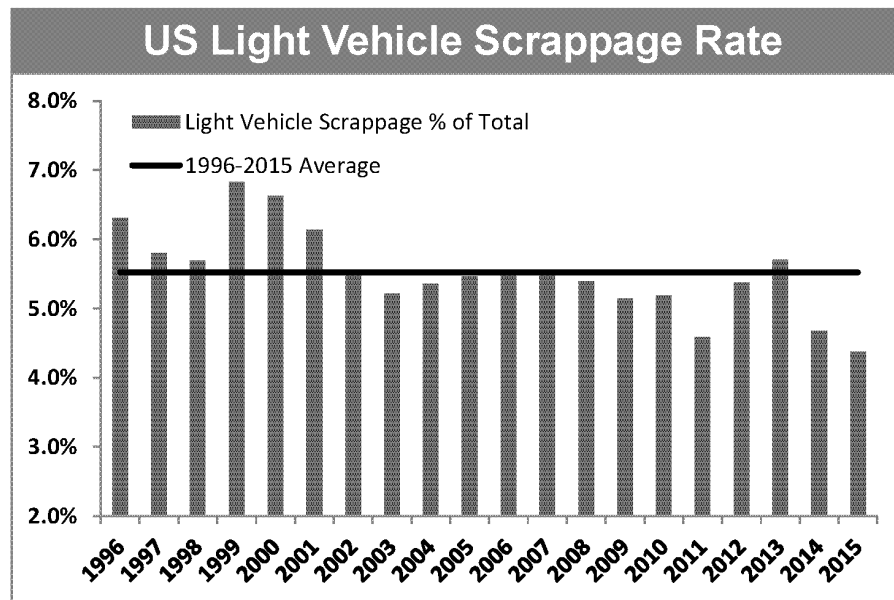
- **Long-run average light vehicle expenditure as % of GDP implies 18.0 mn US LV SAAR.**
 - US has averaged 3.25% of GDP spending on light vehicles over the past 30 years.
 - Currently at 3.0%.
 - 3.30% of current annualized \$19.4 trillion GDP is \$631 bn.
 - Assuming a \$35,000 ASP, $(\$670 \text{ bn} / \$35,000) = 18.0 \text{ mn US LV SAAR}$.
- **That only presumes we return to historical average (in nod to seeming departure from historical average)**
 - In reality, each time we have undershot the historical average, we have subsequently overshot.



Source: Bureau of Economic Analysis,

North America Demand Outlook: Belief in pent-up demand driven recovery also buoyed by scrappage & average age analysis

- **Historical scrapping rate suggests minimum replacement demand of ~14.3 mn and supports SAAR of ~17.0 mn.**
 - US currently has ~260 mn light vehicles on the road.
 - We have historically averaged 5.5% scrapping rate; implying ~14.3 mn “minimum replacement demand”
 - Assuming cars per person holds steady, this implies ~17.0 mn US LV SAAR (3.1 mn annual increase in population * (260 mn cars / 310 mn people)) + 14.3 mn minimum replacement demand).
- **Record average age of vehicles supports notion of a pent-up demand driven replacement cycle.**



Average of sales per capita (17.2 mn), GDP (18.0 mn), and scrappage (17.0 mn) approaches imply ~17.0-17.5 mn “normalized demand”

➤ What does all this math tell us?

- 1) It tells us we’re not running “too hot”
 - 2) It implies we can operate above normalized demand for a period of time, given we operated below it for so long.
- Estimating pent-up demand since 2008, when we first dipped below normalized levels suggests “pent-up” demand of ~17.2 mn units, which we have only in recent years begun to tap.

| "JPM Approach" | | | |
|--------------------|---------|-------------------|----------------|
| Year | US SAAR | Normalized Demand | Pent-up Demand |
| 2007 | 16.1 | 15.7 | (0.4) |
| 2008 | 13.2 | 15.4 | 2.2 |
| 2009 | 10.4 | 15.1 | 4.7 |
| 2010 | 11.6 | 15.8 | 4.2 |
| 2011 | 12.7 | 16.0 | 3.3 |
| 2012 | 14.4 | 16.3 | 1.9 |
| 2013 | 15.5 | 16.5 | 1.0 |
| 2014 | 16.4 | 16.7 | 0.3 |
| 2015 | 17.5 | 16.9 | (0.6) |
| 2016 | 17.6 | 17.0 | (0.6) |
| 2017 | 17.2 | 17.2 | (0.0) |
| 2018 | 17.1 | 17.2 | 0.1 |
| Pent-up Demand | | | 17.2 |
| (of which remains) | | | 16.1 |

Source: J.P. Morgan estimates.

| More Conservative Approach | |
|----------------------------|----------------|
| Normalized Demand | Pent-up Demand |
| 16.0 | (0.1) |
| 16.0 | 2.8 |
| 16.0 | 5.6 |
| 16.0 | 4.4 |
| 16.0 | 3.3 |
| 16.0 | 1.6 |
| 16.0 | 0.5 |
| 16.0 | (0.4) |
| 16.0 | (1.5) |
| 16.0 | (1.6) |
| 16.0 | (1.2) |
| 16.0 | (1.1) |
| 18.1 | |
| 12.3 | |

2Q US Auto Parts Supplier Earnings Recap:

More Suppliers Missed than Beat;
More Suppliers Trimmed than Raised;
Section 301 Tariffs Bit Somewhat More than Expected.

The Average Auto Parts Supplier Missed Expectations in 2Q

- *Relative to the Street, 6 suppliers missed (ADNT, GNTX, MGA, TEN, THRM & VC) vs. just 4 that beat (ALV, AXL, APTV & MTOR). Another 4 were roughly in-line (DAN, LEA, BWA & TOWR).*

| | 2Q18 Earnings Results | | | | | | 2Q18 Earnings Results | | | | |
|-------------------------|-----------------------|-----------|---------|--------|---------|-------------------------|-----------------------|-----------|---------|--------|---------|
| | Company | Consensus | Var (%) | JPM | Var (%) | | Company | Consensus | Var (%) | JPM | Var (%) |
| ADNT | | | | | | MTOR | | | | | |
| Sales | 4,494 | 4,371 | 2.8% | 4,364 | 3.0% | Sales | 1,129 | 1,060 | 6.5% | 1,066 | 5.9% |
| EBIT | 206 | 223 | -7.6% | 211 | -2.4% | EBITDA | 135 | 122 | 10.7% | 121 | 11.6% |
| EBIT Margin | 4.6% | 5.1% | -0.5% | 4.8% | -0.3% | EBITDA Margin | 12.0% | 11.5% | 0.5% | 11.5% | 0.5% |
| EPS | \$1.45 | \$1.58 | -8.2% | \$1.55 | -6.5% | EPS | \$0.89 | \$0.77 | 15.6% | \$0.76 | 17.1% |
| ALV | | | | | | TEN | | | | | |
| Sales | 2,212 | 2,236 | -1.1% | 2,292 | -3.5% | Sales | 2,537 | 2,552 | -0.6% | 2,522 | 0.6% |
| EBIT | 229 | 224 | 2.2% | 242 | -5.4% | EBIT | 175 | 182 | -3.8% | 184 | -4.9% |
| EBIT margin | 10.4% | 10.0% | 0.3% | 10.6% | -0.2% | EBIT Margin | 6.9% | 7.1% | -0.2% | 7.3% | -0.4% |
| EPS | \$2.22 | \$1.80 | 23.3% | \$1.85 | 20.0% | EPS | \$1.92 | \$1.96 | -2.0% | \$1.99 | -3.5% |
| AXL | | | | | | THRM | | | | | |
| Sales | 1,901 | 1,824 | 4.2% | 1,898 | 0.2% | Sales | 264 | 267 | -1.1% | 272 | -2.9% |
| EBITDA | 348 | 334 | 4.2% | 351 | -0.9% | EBITDA | 36 | 37 | -4.1% | 39 | -9.0% |
| EBITDA margin | 18.3% | 18.3% | 0.0% | 18.5% | -0.2% | EBITDA Margin | 13.4% | 13.9% | -0.4% | 14.3% | -0.9% |
| EPS | \$1.23 | \$1.11 | 10.8% | \$1.17 | 5.1% | EPS | \$0.58 | \$0.52 | 11.5% | \$0.54 | 7.4% |
| BWA | | | | | | TOWR | | | | | |
| Sales | 2,694 | 2,711 | -0.6% | 2,698 | -0.1% | Sales | 556 | 549 | 1.3% | 529 | 5.1% |
| Operating Profit | 341 | 340 | 0.3% | 342 | -0.3% | EBITDA | 58 | 58 | 0.2% | 57 | 1.6% |
| Operating Profit Margin | 12.7% | 12.5% | 0.1% | 12.7% | 0.0% | EBITDA Margin | 10.5% | 10.6% | -0.1% | 10.8% | -0.3% |
| EPS | \$1.18 | \$1.10 | 7.3% | \$1.09 | 8.3% | EPS | \$1.09 | \$1.08 | 0.9% | \$1.09 | 0.0% |
| DAN | | | | | | VC | | | | | |
| Sales | 2,054 | 2,004 | 2.5% | 1,984 | 3.5% | Sales | 758 | 798 | -5.0% | 825 | -8.1% |
| EBITDA | 246 | 250 | -1.6% | 253 | -2.8% | Adjusted EBITDA | 81 | 90 | -10.0% | 86 | -5.8% |
| EBITDA Margin | 12.0% | 12.5% | -0.5% | 12.8% | -0.8% | Adjusted EBITDA Margin | 10.7% | 11.3% | -0.6% | 10.4% | 0.3% |
| EPS | \$0.74 | \$0.79 | -6.3% | \$0.76 | -2.6% | | | | | | |
| APTV | | | | | | | | | | | |
| Sales | 3,664 | 3,537 | 3.6% | 3,464 | 5.8% | | | | | | |
| EBIT | 474 | 456 | 3.9% | 451 | 5.1% | | | | | | |
| EBIT Margin | 12.9% | 12.9% | 0.0% | 13.0% | -0.1% | | | | | | |
| EPS | \$1.40 | \$1.36 | 2.9% | \$1.34 | 4.5% | | | | | | |
| GNTX | | | | | | | | | | | |
| Sales | 455 | 467 | -2.6% | 469 | -3.0% | | | | | | |
| Gross Profit | 172 | 177 | -2.8% | 179 | -3.9% | | | | | | |
| Gross Margin | 37.1% | 37.9% | -0.8% | 38.2% | -1.1% | | | | | | |
| EPS | \$0.40 | \$0.41 | -2.4% | \$0.42 | -4.8% | | | | | | |
| LEA | | | | | | | | | | | |
| Sales | 5,581 | 5,531 | 0.9% | 5,455 | 2.3% | | | | | | |
| COI | 471 | 471 | 0.0% | 449 | 4.9% | | | | | | |
| COI Margin | 8.4% | 8.5% | -0.1% | 8.2% | 0.2% | | | | | | |
| EPS | \$4.95 | \$4.99 | -0.8% | \$4.87 | 1.6% | | | | | | |
| MGA | | | | | | | | | | | |
| Sales | 10,280 | 10,469 | -1.8% | 10,593 | -3.0% | | | | | | |
| EBIT | 803 | 846 | -5.1% | 842 | -4.6% | | | | | | |
| EBIT Margin | 7.8% | 8.1% | -0.3% | 7.9% | -0.1% | | | | | | |
| EPS | \$1.77 | \$1.74 | 1.7% | \$1.71 | 3.5% | | | | | | |
| | | | | | | Simple Average | | | | | |
| | | | | | | Sales (ex-THRM) | | | 0.6% | | 0.0% |
| | | | | | | EBIT/EBITDA (ex-THRM) | | | -1.0% | | -1.4% |
| | | | | | | Market-cap weighted EPS | | | 3.9% | | 3.7% |
| | | | | | | Aggregate | | | | | |
| | | | | | | Sales | 38,315 | 38,109 | 0.5% | 38,159 | 0.4% |
| | | | | | | EBIT/EBITDA | 3,739 | 3,773 | -0.9% | 3,768 | -0.8% |
| | | | | | | Market-cap weighted EPS | | | 3.9% | | 3.7% |

Most Suppliers Trimmed Full Year 2018 Guidance in 2Q

More suppliers trimmed than raised full year 2018 guidance .

Of the 14 auto parts suppliers we cover:

- More suppliers trimmed than raised 2018 guidance:
 - 5 suppliers trimmed 2018 guidance: ALV, GNTX, MGA, TEN & VC
 - 3 suppliers raised previously provided 2018 guidance: AXL, APTV & MTOR
 - 6 suppliers maintained previously issued 2018 guidance: ADNT, DAN, THRM, LEA & TOWR; we also consider BWA as having roughly maintained guidance.

On Earnings Day, Automakers' Shares Declined, While Auto Parts Supplier & Tiremaker Shares Traded Higher (on average)

- The average auto parts supplier stock outperformed the market on earnings day by +94 bps but underperformed by -182 bps vs. the S&P from July 19 (the day before GNTX kicked off 2Q supplier earnings on July 20) through August 8 (when MGA was the last supplier to report results).

| Ticker | | EBIT/EBITDA vs. Consensus | Share Price Change on Earnings Day | S&P Change on Earnings Day | Price on Jul 19 | Price on Aug 08 | Share Price vs. Jul 19 | S&P vs. Jul 20 | Relative Performance |
|---|----------------|---------------------------|------------------------------------|----------------------------|-----------------|-----------------|------------------------|----------------|----------------------|
| GM | GM US EQUITY | NA | -4.6% | 0.9% | 39.31 | 37.66 | -4.2% | 1.9% | -6.1% |
| F | F US EQUITY | NA | -6.0% | -0.3% | 10.82 | 10.05 | -7.1% | 1.9% | -9.0% |
| RACE | RACE US EQUITY | NA | -11.0% | -0.1% | 142.52 | 125.84 | -11.7% | 1.9% | -13.6% |
| TSLA | TSLA US EQUITY | NA | 16.2% | 0.5% | 320.23 | 370.34 | 15.6% | 1.9% | 13.8% |
| Automakers (ex-TSLA, RACE) Avg. | | | -1.4% | 0.2% | | | -1.8% | 1.9% | -3.7% |
| GT | GT US EQUITY | NA | 9.5% | -0.7% | 21.95 | 24.71 | 12.6% | 1.9% | 10.7% |
| CTB | CTB US EQUITY | NA | 7.7% | 0.4% | 25.80 | 29.45 | 14.1% | 1.9% | 12.2% |
| Tires Avg. | | | 8.6% | -0.2% | | | 13.4% | 1.9% | 11.5% |
| ADNT | ADNT US EQUITY | -18.9% | 5.8% | -0.3% | 48.48 | 45.33 | -6.5% | 1.9% | -8.4% |
| ALV | ALV US EQUITY | 9.6% | 0.4% | -0.7% | 104.68 | 98.68 | -5.7% | 1.9% | -7.6% |
| AXL | AXL US EQUITY | 1.4% | 6.2% | 0.5% | 16.47 | 17.46 | 6.0% | 1.9% | 4.1% |
| BWA | BWA US EQUITY | 1.5% | 1.0% | -0.3% | 45.03 | 45.55 | 1.2% | 1.9% | -0.7% |
| DAN | DAN US EQUITY | -0.5% | -5.2% | 0.9% | 21.25 | 20.89 | -1.7% | 1.9% | -3.6% |
| APTV | APTV US EQUITY | 3.7% | 6.0% | 0.5% | 94.97 | 98.09 | 3.3% | 1.9% | 1.4% |
| GNTX | GNTX US EQUITY | 1.1% | -5.0% | -0.1% | 23.41 | 23.86 | 1.9% | 1.9% | 0.0% |
| LEA | LEA US EQUITY | 4.0% | -5.3% | -0.3% | 184.14 | 177.47 | -3.6% | 1.9% | -5.5% |
| MGA | MGA US EQUITY | 5.1% | -8.2% | 0.0% | 59.75 | 54.39 | -9.0% | 1.9% | -10.9% |
| MTOR | MTOR US EQUITY | 15.1% | 10.3% | -0.1% | 20.75 | 21.84 | 5.3% | 1.9% | 3.4% |
| TEN | TEN US EQUITY | -5.4% | 1.6% | -0.7% | 44.66 | 44.89 | 0.5% | 1.9% | -1.4% |
| THRM | THRM US EQUITY | -0.8% | 9.0% | -0.3% | 40.60 | 46.75 | 15.1% | 1.9% | 13.3% |
| TOWR | TOWR US EQUITY | 1.0% | 2.7% | 0.5% | 32.30 | 32.70 | 1.2% | 1.9% | -0.7% |
| VC | VC US EQUITY | 0.0% | -6.6% | -0.3% | 129.66 | 120.76 | -6.9% | 1.9% | -8.8% |
| Auto Parts Supplier (ex-THRM) Avg. | | 1.2% | 0.9% | -0.1% | Avg. | | 0.1% | 1.9% | -1.8% |

Source: Bloomberg; J.P. Morgan estimates.

2018 J.P. Morgan Automotive Conference Takeaways:

Executives Speak to Trend in Tariffs and Industry Sales & Production;
GM President Updates Investors on Autonomous Efforts;
Ford EVP Updates on Turnaround + Inbound Interest in Autonomous Biz

Executives Speak to Trend in Tariffs and Industry Sales & Production

Executives spoke to their outlook for generally flat to slightly higher global light vehicle sales and production, although spoke to softer 3Q trends and flat-to-softer US light vehicle SAAR.

- However, automakers and auto parts suppliers warned of WLTP impact greater than assumed by IHS in 3Q in Europe (IHS stated at our conference they assumed 370K of impact), with VW & Daimler most impacted.
 - Market participants were encouraged, however, by continued strong sales in Europe, suggesting production can be made up in subsequent quarters (beginning in 4Q18 and extending in 1Q19)
- Management teams also discussed the possibility of an “air pocket” in China in 3Q, perhaps reflecting pressure or sentiment regarding pressure from US tariffs and tighter credit availability.
 - Market participants across-the-board expressed confidence in the long-term growth outlook in China.
- Most executives at the conference expected slightly softer US light vehicle sales, although none foresaw a material correction and a minority looked for flat or even flat-to-slightly rising sales.

Executives spoke to a manageable impact from so far implemented Section 232 and Section 301 tariffs; NAFTA has the potential to be a very material headwind, of course, although outright dissolution was deemed unlikely.

- Magna CEO Don Walker expressed a high degree of confidence NAFTA would only be “modernized”, with potentially immaterial impact to the industry overall and Magna in particular.

GM President Updates Investors on Autonomous Efforts

Communication around timing of when GM can be expected to remove the driver from the equation seems somewhat slipped relative to prior.

- In September 2017, we hosted meetings in which Dan Ammann and Chuck Stevens suggested GM was “months or quarters, not years” away from commercializing autonomous ride-share (which investors took to be as soon as 2Q18), sparking a large rally in GM shares;
- At GM’s late November 2017 San Francisco autonomous-focused investor day, management suggested it would commercialize autonomous ride-share in “2019”;
- At the 2018 J.P. Morgan Automotive Conference in August 2018, Mr. Ammann would only allow that GM would remove the driver from the equation when the automaker had met necessary safety thresholds.
 - This may not have been a downgrade in communication per se, but it seemed qualitatively so to us;
 - Rate of autonomous adoption seems to have slowed industry-wide, given increased regulatory scrutiny, perhaps in the wake of high profile safety incidents;
 - We continue to believe GM is in the lead, but will first-mover enabled “moats” be as valuable if everyone is slowed, giving laggards time to catch up?

Relative to Autos 1.0, GM insisted pushed back on the need to materially change its approach to passenger car strategy in North America.

- We sensed GM management is contemplating portfolio pruning only at the margin.

Ford EVP Updates on Turnaround + Inbound Interest in Autonomous Biz

Ford Executive Vice President of Product Development & Purchasing Hau Thai-Tang presented at the 2018 J.P. Morgan Automotive Conference.

- The “High Performing” parts of Ford’s business on average generate 40% return on invested capital and 16% EBIT margin (very enviable returns in the auto industry):
 - *We estimate — North America Trucks, SUVs, CUVs, Vans, and Lincoln, European LCVs, China (typically) SUVs, CUVs, and Vans, and Heavy Vehicles + Ford Credit.*
- The simply “Profitable” parts of Ford’s business do not meet Ford’s return on capital thresholds:
 - *We estimate — Mustang, European CUVs and non-LCV Vans, China (typically) Passenger Cars, emerging market trucks (i.e., Global Ranger), and the Middle East & Africa region (typically).*
- The “High Performing” parts of Ford’s business on average generate 40% return on invested capital and 16% EBIT margin (very enviable returns in the auto industry):
 - *We estimate — North America Passenger Cars (apart from the Mustang), South America (with possible exception of Ranger), European Passenger Cars, and Middle East & Africa (currently).*

Updated Thoughts on Ford:

Out-of-Consensus Long Thesis —

** Charges Are A Good Thing

** Autonomous Biz Likely Has Unreflected Value

Ford — Charges Are A Good Thing; China Problems Not Structural in Same Way as Europe / South America

Big restructuring charges are a Good Thing — They signal Ford is readying radical changes to improve profitability.

- ‘If we’re willing to cut all passenger cars in North America, what else might we be willing to do...’
- \$7 bn of cash buys a lot of restructuring:
 - We estimate Ford will trade cash and its 100% stake in Ford South America in exchange for a minority stake in the combined operations of Ford & Volkswagen in South America...
 - — ...or exit the market entirely;
 - We estimate Ford will lay off ~15K workers in high cost Germany, closing its large Cologne and Saarlouis assembly facilities;
 - VW (most likely) or PSA (now less likely) could produce passenger cars for Ford in Europe, which Ford could then distribute through its dealer base;
 - This would leave Ford’s China operations potentially sub-scale in passenger cars, but perhaps these could similarly ride on VW platforms in some sort of relatively encompassing alliance.

Ford’s problems in China seem less structural than in Europe & South America — and than investors imagine.

- Large majority of product to be refreshed in 2018;
- Current sales reflect currently older vehicle lineup — and yet current profitability reflects development expense for new models;
- Headwind from tariffs on imported Lincolns to subside upon localization of production.

Ford — Autonomous Biz Likely Has Unreflected Value

| Ford Valuation Analysis | Earnings Ramp | |
|--|----------------|----------------|
| | NTM | 2019E |
| JPM Auto EBITDA incl. Auto Equity Income | 11,243 | 12,819 |
| (+) Pension Expense/(Income) ex-Service Cost | (357) | (362) |
| (+) OPEB Expense/(Income) ex-Service Cost | 272 | 272 |
| (-) Auto Equity Income | 1,200 | 1,200 |
| Auto EBITDAPO ex. Equity Income | 9,958 | 11,529 |
| Current Multiple of JPM NTM EBITDAPO | 2.1x | |
| JPM EV/EBITDAP Multiple | | 3.0x |
| Enterprise Value | 21,205 | 34,587 |
| (+) Automotive Gross Cash | 26,500 | 26,848 |
| (-) Minimum Required Cash (5% of Sales) | 7,211 | 7,335 |
| Adjusted Cash | 19,289 | 19,513 |
| (-) Automotive Gross Debt | 16,500 | 15,959 |
| (+) In-the-Money Converts | - | - |
| Adjusted Debt | (16,500) | (15,959) |
| Adjusted Net Cash/(Debt) | 2,789 | 3,554 |
| (+) FMC Stake (1x BV) | 15,349 | 15,880 |
| (+) Equity Stakes (8x P/E) | 7,203 | 9,600 |
| Core Stakes | 22,552 | 25,480 |
| (-) Pension Underfunding | 9,859 | 6,247 |
| (-) OPEB Underfunding | 5,900 | 5,900 |
| (+) NPV of Tax Benefit on Pension and OPEB | 2,175 | 2,320 |
| (+) Present Value of U.S NOLs | 4,841 | 4,061 |
| Other Adjustments | (8,744) | (5,765) |
| Implied Equity Value | 37,802 | 57,855 |
| Beginning Diluted Share Count | 3,996 | 4,002 |
| Implied Share Price | \$9.46 | \$14 |
| Net Income | 5,311 | 6,205 |
| Average Diluted Share Count | 3,997 | 3,997 |
| EPS | \$1.33 | \$1.55 |
| Implied P/E | 7.1x | 9.0x |
| Current Value per Share | \$9.46 | \$9.46 |
| Upside vs. Current | | 48% |

| General Motors Valuation Analysis | Earnings Ramp | |
|---|-----------------|----------------|
| | NTM | 2019E |
| JPM Auto EBITDA incl. Auto Equity Income | 15,606 | 16,664 |
| (+) Pension Expense/(Income) ex Service costs | (1,762) | (1,928) |
| (+) OPEB Expense/(Income) ex Service costs | 207 | 207 |
| (+) 100% of GM Cruise Holdings LLC Expense/(Income) | (1,300) | (1,300) |
| (-) China / IO Equity Income | 2,004 | 1,918 |
| Auto EBITDAPO ex. China Equity Income & Cruise | 13,347 | 14,324 |
| Current Multiple of JPM NTM EBITDAPO | 2.5x | |
| JPM EV/EBITDAPO Multiple | | 3.5x |
| Enterprise Value | 33,178 | 50,135 |
| (+) Automotive Gross Cash | 17,999 | 20,288 |
| (-) Cash to be injected into Cruise at \$11.48 bn value | (1,100) | (1,100) |
| (-) Minimum Required Cash (5% of Sales) | 7,352 | 7,378 |
| Adjusted Cash | 9,547 | 11,809 |
| (-) Automotive Gross Debt | 14,318 | 14,318 |
| Adjusted Net Cash/(Debt) | (4,771) | (2,509) |
| (+) Value of PSA Warrants | 767 | 767 |
| (+) Value of 80.4% of GM Cruise Holdings LLC | 9,230 | 9,230 |
| (+) Modestly less than 10% stake in Lyft | 884 | 884 |
| (+) GM Financial (1x BV) | 8,737 | 10,880 |
| (+) China Stake (8x P/E) | 16,033 | 15,347 |
| Core Stakes | 35,651 | 37,107 |
| (-) Pretax Pension Underfunding | 14,100 | 9,425 |
| (-) OPEB Underfunding | 6,180 | 6,180 |
| (+) NPV of Tax Benefit on Pension and OPEB Payments | 1,374 | 1,256 |
| (+) Present Value of U.S NOLs | 6,594 | 5,783 |
| Other Adjustments | (12,313) | (8,565) |
| Implied Equity Value | 51,745 | 76,167 |
| Beginning Diluted Share Count | 1,431 | 1,402 |
| Implied Share Price | \$36.16 | \$54 |
| Net Income | 8,737 | 9,317 |
| Diluted Share Count | 1,401 | 1,380 |
| EPS | \$6.23 | \$6.75 |
| Implied P/E | 5.8x | 8.0x |
| Current Value per Share | \$36.16 | \$36.16 |
| Upside vs Current | 0% | 49% |

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Ford — Autonomous Biz Likely Has Unreflected Value

| General Motors Valuation Analysis | Earnings Ramp | |
|---|-----------------|----------------|
| | NTM | 2019E |
| JPM Auto EBITDA incl. Auto Equity Income | 15,606 | 16,664 |
| (+) Pension Expense/(Income) ex Service costs | (1,762) | (1,928) |
| (+) OPEB Expense/(Income) ex Service costs | 207 | 207 |
| (+) 100% of GM Cruise Holdings LLC Expense/(Income) | (1,300) | (1,300) |
| (-) China / IO Equity Income | 2,004 | 1,918 |
| Auto EBITDAPO ex. China Equity Income & Cruise | 13,347 | 14,324 |
| Current Multiple of JPM NTM EBITDAPO | 2.5x | |
| JPM EV/EBITDAPO Multiple | | 3.5x |
| Enterprise Value | 33,178 | 50,135 |
| (+) Automotive Gross Cash | 17,999 | 20,288 |
| (-) Cash to be injected into Cruise at \$11.48 bn value | (1,100) | (1,100) |
| (-) Minimum Required Cash (5% of Sales) | 7,352 | 7,378 |
| Adjusted Cash | 9,547 | 11,809 |
| (-) Automotive Gross Debt | 14,318 | 14,318 |
| Adjusted Net Cash/(Debt) | (4,771) | (2,509) |
| (+) Value of PSA Warrants | 767 | 767 |
| (+) Value of 80.4% of GM Cruise Holdings LLC | 9,230 | 9,230 |
| (+) Modestly less than 10% stake in Lyft | 884 | 884 |
| (+) GM Financial (1x BV) | 8,737 | 10,880 |
| (+) China Stake (8x P/E) | 16,033 | 15,347 |
| Core Stakes | 35,651 | 37,107 |
| (-) Pretax Pension Underfunding | 14,100 | 9,425 |
| (-) OPEB Underfunding | 6,180 | 6,180 |
| (+) NPV of Tax Benefit on Pension and OPEB Payments | 1,374 | 1,256 |
| (+) Present Value of U.S NOLs | 6,594 | 5,783 |
| Other Adjustments | (12,313) | (8,565) |
| Implied Equity Value | 51,745 | 76,167 |
| Beginning Diluted Share Count | 1,431 | 1,402 |
| Implied Share Price | \$36.16 | \$54 |
| Net Income | 8,737 | 9,317 |
| Diluted Share Count | 1,401 | 1,380 |
| EPS | \$6.23 | \$6.75 |
| Implied P/E | 5.8x | 8.0x |
| Current Value per Share | \$36.16 | \$36.16 |
| Upside vs Current | 0% | 49% |

| General Motors Valuation Analysis | Earnings Ramp | |
|---|-----------------|----------------|
| | NTM | 2019E |
| JPM Auto EBITDA incl. Auto Equity Income | 15,606 | 16,664 |
| (+) Pension Expense/(Income) ex Service costs | (1,762) | (1,928) |
| (+) OPEB Expense/(Income) ex Service costs | 207 | 207 |
| (+) 100% of GM Cruise Holdings LLC Expense/(Income) | | |
| (-) China / IO Equity Income | 2,004 | 1,918 |
| Auto EBITDAPO ex. China Equity Income & Cruise | 12,047 | 13,024 |
| Current Multiple of JPM NTM EBITDAPO | 3.4x | |
| JPM EV/EBITDAPO Multiple | | 4.5x |
| Enterprise Value | 41,307 | 57,958 |
| (+) Automotive Gross Cash | 17,999 | 20,288 |
| (-) Cash to be injected into Cruise at \$11.48 bn value | | |
| (-) Minimum Required Cash (5% of Sales) | 7,352 | 7,378 |
| Adjusted Cash | 10,647 | 12,909 |
| (-) Automotive Gross Debt | 14,318 | 14,318 |
| Adjusted Net Cash/(Debt) | (3,671) | (1,409) |
| (+) Value of PSA Warrants | 767 | 767 |
| (+) Value of 80.4% of GM Cruise Holdings LLC | | |
| (+) Modestly less than 10% stake in Lyft | 884 | 884 |
| (+) GM Financial (1x BV) | 8,737 | 10,880 |
| (+) China Stake (8x P/E) | 16,033 | 15,347 |
| Core Stakes | 26,421 | 27,877 |
| (-) Pretax Pension Underfunding | 14,100 | 9,425 |
| (-) OPEB Underfunding | 6,180 | 6,180 |
| (+) NPV of Tax Benefit on Pension and OPEB Payments | 1,374 | 1,256 |
| (+) Present Value of U.S NOLs | 6,594 | 5,783 |
| Other Adjustments | (12,313) | (8,565) |
| Implied Equity Value | 51,745 | 75,861 |
| Beginning Diluted Share Count | 1,431 | 1,402 |
| Implied Share Price | \$36.16 | \$54 |
| Net Income | 8,737 | 9,317 |
| Diluted Share Count | 1,401 | 1,380 |
| EPS | \$6.23 | \$6.75 |
| Implied P/E | 5.8x | 8.0x |
| Current Value per Share | \$36.16 | \$36.16 |
| Upside vs Current | 0% | 49% |

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Updated Thoughts on Tesla:

Is Funding Secured or Not Secured?
That Is the Question!

Tesla — Is Funding Secured or Not Secured? That Is the Question!

We significantly raised our price target based upon assertions of fact from Tesla CEO Elon Musk that “funding is secured”.

- ...and that “the only reason why this is not certain is that it’s contingent on a shareholder vote”

We raised our price target from \$195 to \$308, but are ready to again value the firm on fundamentals alone should a deal not be cobbled together.

- Already, it seems, such a deal is in trouble — and may never have been anywhere near the finish line in the first place:
 - Monday, August 13 morning blog post to us seems a walk-back aimed more at providing legal cover for Mr. Musk than at providing additional details to the financial community;
 - Monday, August 13 afternoon report by NYTimes says Musk 4/20 tweet took Board by surprise;
 - Monday, August 13 evening tweet by Elon Musk says excited to work with Silver Lake and Goldman Sachs as financial advisors on proposal to take Tesla private.
 - **WE NOT SURE WHAT TO BELIEVE!**

| New J.P. Morgan TSLA Valuation Framework | | |
|--|------|--|
| \$195 | 50% | Fundamentals-based Analysis |
| \$420 | 50% | Purported Going Private Price |
| \$308 | 100% | J.P. Morgan Weighted-average Price Target |
| -14% | | <i>Upside vs. Current Price</i> |

Source: J.P. Morgan estimates.

| Fundamentals-based TSLA Valuation Framework | | |
|--|------|--------------|
| Discounted Cash Flows | 50% | \$216 |
| 2020 Multiples-based Analysis | 50% | \$175 |
| Fundamentals-Based Valuation Analysis | 100% | \$195 |
| Current Share Price | | \$356 |
| <i>Upside/ Downside to current share price</i> | | <i>-45%</i> |

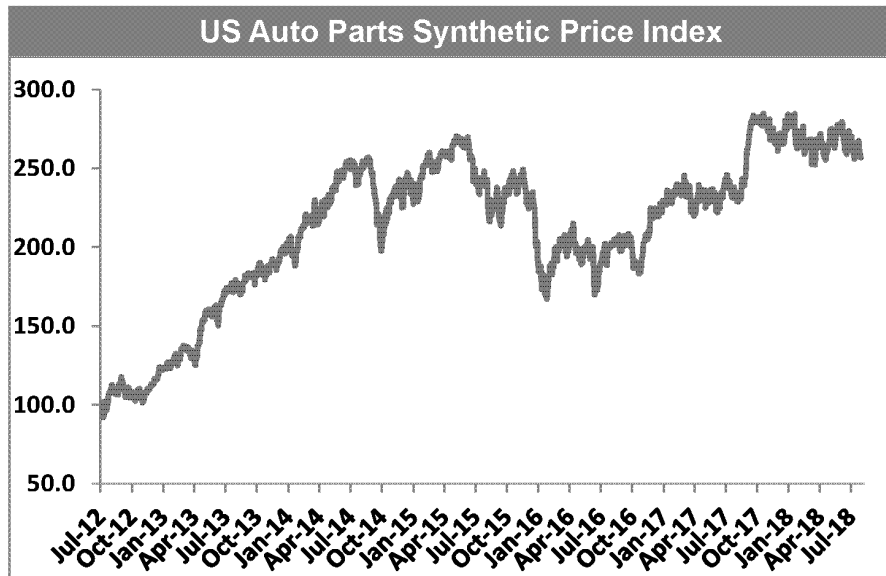
Source: J.P. Morgan estimates.

Appendix: Valuation of US Autos & Auto Parts Suppliers

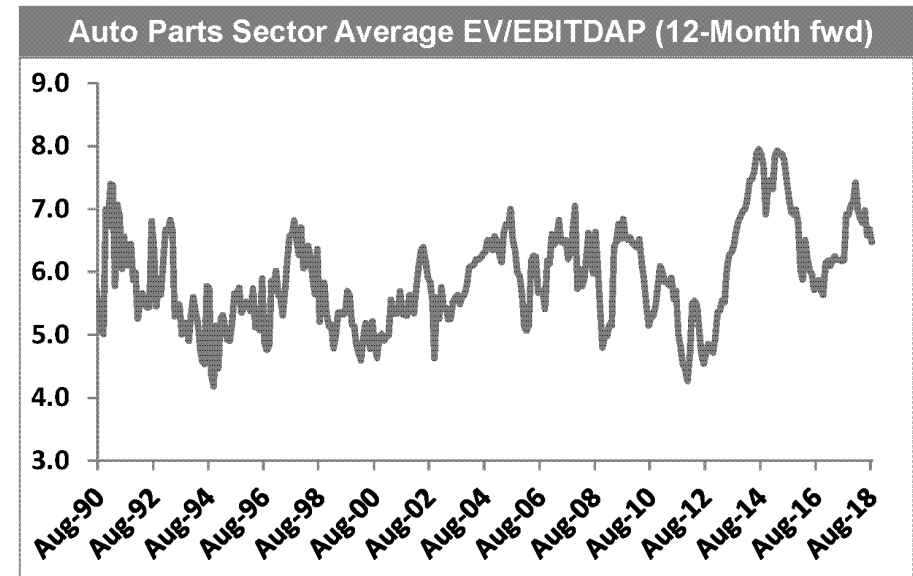
Auto Parts Supplier Multiples Rallied Again in Early 2018 But Peaked in June 2015 (Prices, However, Remain Near All-time Highs)

- The average auto parts supplier is up +3.2% YTD vs. the S&P +5.5%, and +157% since July 2012 vs. the S&P +107%.
- Supplier valuation now stands at 6.5x NTM EBITDAP, vs. 7.2x at 2014-end, 5.3x long-run (1991-2011) average, and 4.3x at the time of our initiation. The sector peaked at 8.1x NTM EBITDAP on June 23, 2015.

Supplier Index and Auto Parts Sector Average EV/EBITDAP



Source: J.P. Morgan estimates. Note: Average of all supplier stock rebased to 100 on Jan 3, 2012



Source: Bloomberg and J.P. Morgan estimates. Note: Sector Average excludes GNTX

Automaker Valuation Comps

| Company | Ticker | Latest Price | Basic Shares | Market Cap | Latest Debt | Latest Cash | Min Cash | Net Debt | Post-Tax Pension | PV of NOL | Equity Stakes | NCI | EV | Sales | | | EBITDA | | | | EPS | | |
|---------------------------|---------|--------------|--------------|------------|-------------|-------------|----------|----------|------------------|-----------|---------------|-------|--------|---------|---------|---------|--------|--------|--------|--------|-------|-------|-------|
| | | | | | | | | | | | | | | 2017 | 2018 | 2019 | NTM | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 |
| Global OEMs (in local FX) | | | | | | | | | | | | | | | | | | | | | | | |
| GM | GM US | 36.16 | 1,411 | 51,018 | 14,318 | 16,899 | 7,352 | 4,771 | 18,906 | -6,594 | -25,251 | 0 | 42,851 | 133,449 | 131,954 | 133,625 | 15,606 | 15,104 | 12,241 | 13,445 | 6.62 | 6.10 | 6.75 |
| Ford | F US | 9.46 | 3,986 | 37,705 | 16,500 | 26,500 | 7,211 | -2,789 | 13,584 | -4,841 | -23,749 | 0 | 19,911 | 145,653 | 146,985 | 146,709 | 11,243 | 12,187 | 10,729 | 12,819 | 1.78 | 1.35 | 1.55 |
| Ferrari | RACE US | 122.00 | 190 | 23,151 | 1,049 | 650 | 0 | 400 | 0 | 0 | -105 | 0 | 20,588 | 3,417 | 3,489 | 3,661 | 1,102 | 1,036 | 1,125 | 1,205 | 2.82 | 3.17 | 3.33 |
| Tesla | TSLA US | 356.41 | 171 | 60,801 | 10,552 | 3,530 | 0 | 7,022 | 0 | 0 | 0 | 0 | 67,823 | 11,759 | 17,505 | 21,575 | 706 | 471 | 706 | 2,233 | -8.66 | -8.92 | -1.55 |
| | | | | | | | | | | | | | | | | | | | | | | | |
| BMW | BMW GY | 83.29 | 658 | 54,772 | -1,498 | 21,267 | NA | -22,765 | 3,236 | NA | -3,457 | 436 | 32,222 | 70,715 | 70,386 | 74,441 | NA | 14,853 | 12,736 | 13,144 | 16.88 | 11.83 | 12.18 |
| Daimler | DAI GY | 57.23 | 1,070 | 61,227 | -1,812 | 18,409 | NA | -20,221 | 5,600 | NA | -12,018 | 1,291 | 35,879 | 140,555 | 146,468 | 150,177 | NA | 18,233 | 19,107 | 19,565 | 7.28 | 9.80 | 10.26 |
| Fiat Chrysler | FCA IM | 14.07 | 1,960 | 27,567 | 19,708 | 17,318 | NA | 2,390 | 9,278 | NA | 2,300 | 168 | 41,703 | 110,934 | 115,829 | 119,081 | NA | 13,520 | 15,333 | 15,620 | 2.24 | 3.41 | 3.62 |
| Peugeot | UG FP | 24.82 | 905 | 22,458 | 7,309 | 13,503 | NA | -6,194 | 763 | NA | -6,019 | 2,171 | 13,179 | 65,094 | 77,047 | 79,206 | NA | 6,644 | 8,465 | 9,470 | 2.06 | 3.01 | 3.59 |
| Renault | RNO FP | 71.90 | 296 | 21,262 | 10,060 | 12,988 | NA | -2,928 | 1,584 | NA | -22,880 | 294 | -2,668 | 56,257 | 55,148 | 56,836 | NA | 5,070 | 5,868 | 6,241 | 18.64 | 16.88 | 17.86 |
| VW | VOW3 GY | 143.98 | 501 | 72,176 | 6,251 | 28,629 | NA | -22,378 | 32,666 | NA | -41,912 | 229 | 40,781 | 196,949 | 206,374 | 214,647 | NA | 26,093 | 30,414 | 32,824 | 23.43 | 26.50 | 29.15 |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Honda | 7267 JP | 3,272 | 1,793 | 5,867 | 480 | 1,926 | NA | -1,446 | NA | NA | NA | NA | 4,421 | 14,930 | 15,565 | 15,874 | NA | 1,202 | 1,278 | 1,367 | 329 | 344 | 365 |
| Nissan | 7201 JP | 1,030 | 3,911 | 4,029 | -525 | 981 | NA | -1,506 | NA | NA | NA | NA | 2,523 | 12,001 | 12,374 | 12,636 | NA | 1,100 | 1,149 | 1,211 | 156 | 162 | 174 |
| Toyota | 7203 JP | 6,805 | 2,995 | 20,379 | 1,457 | 3,697 | NA | -2,240 | NA | NA | NA | NA | 18,139 | 28,541 | 29,468 | 29,874 | NA | 3,012 | 3,134 | 3,242 | 640 | 635 | 641 |

| Company | Ticker | Rating | Latest Price | Dec-18 Target | Upside/Downside | Gross Debt/EBITDA | | | Net Debt/EBITDA | | | EBITDA Margin | | | EV/Sales | | | EV/EBITDAP | | | | P/E | | |
|----------------------------|---------|--------|--------------|---------------|-----------------|-------------------|-------|-------|-----------------|-------|-------|---------------|-------|-------|----------|------|------|------------|--------|-------|-------|-------|-------|-------|
| | | | | | | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | NTM | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 |
| Global OEMs (in local FX) | | | | | | | | | | | | | | | | | | | | | | | | |
| GM | GM US | OW | 36.16 | 54.00 | 49% | 0.9x | 1.2x | 1.1x | 0.3x | 0.4x | 0.4x | 11.3% | 9.3% | 10.1% | 32% | 32% | 32% | 3.2x | 3.2x | 3.8x | 3.3x | 5.5x | 5.9x | 5.4x |
| Ford | F US | OW | 9.46 | 14.00 | 48% | 1.4x | 1.5x | 1.3x | -0.2x | -0.3x | -0.2x | 8.4% | 7.3% | 8.7% | 14% | 14% | 14% | 2.0x | 1.8x | 2.0x | 1.7x | 5.3x | 7.0x | 6.1x |
| Ferrari | RACE US | N | 122.00 | 114.00 | -7% | 1.0x | 0.9x | 0.9x | 0.4x | 0.4x | 0.3x | 30.3% | 32.2% | 32.9% | 603% | 590% | 562% | 18.7x | 19.9x | 18.3x | 17.1x | 43.2x | 38.5x | 36.7x |
| Tesla | TSLA US | UW | 356.41 | 308.00 | -14% | 22.4x | 14.9x | 4.7x | 14.9x | 9.9x | 3.1x | 4.0% | 4.0% | 10.4% | 517% | 347% | 282% | 96.1x | 144.1x | 96.1x | NA | NA | NA | NA |
| US Avg. (ex-TSLA, Ferrari) | | | | | | 1.2x | 1.4x | 1.2x | 0.0x | 0.1x | 0.1x | 9.8% | 8.3% | 9.4% | 23% | 23% | 23% | 2.6x | 2.5x | 2.9x | 2.5x | 5.4x | 6.5x | 5.7x |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| BMW | BMW GY | N | 83.29 | 90.00 | 8% | -0.1x | -0.1x | -0.1x | -1.5x | -1.8x | -1.7x | 21.0% | 18.1% | 17.7% | 46% | 46% | 43% | NA | 2.2x | 2.5x | 2.5x | 4.9x | 7.0x | 6.8x |
| Daimler | DAI GY | OW | 57.23 | 85.00 | 49% | -0.1x | -0.1x | -0.1x | -1.1x | -1.1x | -1.0x | 13.0% | 13.0% | 13.0% | 26% | 24% | 24% | NA | 2.0x | 1.9x | 1.8x | 7.9x | 5.8x | 5.6x |
| Fiat Chrysler | FCA IM | OW | 14.07 | 19.00 | 35% | 1.5x | 1.3x | 1.3x | 0.2x | 0.2x | 0.2x | 12.2% | 13.2% | 13.1% | 38% | 36% | 35% | NA | 3.1x | 2.7x | 2.7x | 6.3x | 4.1x | 3.9x |
| Peugeot | UG FP | OW | 24.82 | 35.00 | 41% | 1.1x | 0.9x | 0.8x | -0.9x | -0.7x | -0.7x | 10.2% | 11.0% | 12.0% | 20% | 17% | 17% | NA | 2.0x | 1.6x | 1.4x | 12.1x | 8.2x | 6.9x |
| Renault | RNO FP | N | 71.90 | 98.00 | 36% | 2.0x | 1.7x | 1.6x | -0.6x | -0.5x | -0.5x | 9.0% | 10.6% | 11.0% | -5% | -5% | -5% | NA | -0.5x | -0.5x | -0.4x | 3.9x | 4.3x | 4.0x |
| VW | VOW3 GY | OW | 143.98 | 217.00 | 51% | 0.2x | 0.2x | 0.2x | -0.9x | -0.7x | -0.7x | 13.2% | 14.7% | 15.3% | 21% | 20% | 19% | NA | 1.6x | 1.3x | 1.2x | 6.1x | 5.4x | 4.9x |
| European Avg. | | | | | | 0.8x | 0.6x | 0.6x | -0.8x | -0.8x | -0.7x | 13.1% | 13.5% | 13.7% | 24% | 23% | 22% | NA | 1.7x | 1.6x | 1.5x | 6.9x | 5.8x | 5.4x |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Honda | 7267 JP | OW | 3,272 | 4,500 | 38% | 0.4x | 0.4x | 0.4x | -1.2x | -1.1x | -1.1x | 8.1% | 8.2% | 8.6% | 30% | 28% | 28% | NA | 3.7x | 3.5x | 3.2x | 9.9x | 9.5x | 9.0x |
| Nissan | 7201 JP | N | 1,030 | 1,050 | 2% | -0.5x | -0.5x | -0.4x | -1.4x | -1.3x | -1.2x | 9.2% | 9.3% | 9.6% | 21% | 20% | 20% | NA | 2.3x | 2.2x | 2.1x | 6.6x | 6.3x | 5.9x |
| Toyota | 7203 JP | N | 6,805 | 7,800 | 15% | 0.5x | 0.5x | 0.4x | -0.7x | -0.7x | -0.7x | 10.6% | 10.6% | 10.9% | 64% | 62% | 61% | NA | 6.0x | 5.8x | 5.6x | 10.6x | 10.7x | 10.6x |
| Japan Avg. | | | | | | 0.1x | 0.1x | 0.1x | -1.1x | -1.1x | -1.0x | 9.3% | 9.4% | 9.7% | 38% | 37% | 36% | NA | 4.0x | 3.8x | 3.6x | 9.1x | 8.9x | 8.5x |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Global OEM Avg. | | | | | | 0.6x | 0.6x | 0.5x | -0.8x | -0.8x | -0.7x | 11.4% | 11.2% | 11.7% | 27% | 26% | 25% | 2.6x | 2.4x | 2.4x | 2.2x | 7.3x | 7.0x | 6.5x |

Source: Company reports, Bloomberg and J.P. Morgan estimates. Sales, EBITDA, EPS, Debt and Cash presented in local currency. All data are represented on a calendarized basis. Notes: Prices for non-US companies based off last trading day.

- RACE** Market Cap is stated in USD; but all other RACE metrics are in Euros
- GM** and **F** are presented on EV/EBITDAP basis. EV includes post-tax pension and OPEB benefits;
- Honda**, **Nissan**, **Toyota**: JPM Asia Auto estimates. No minimum cash assumption in valuation. EV/EBITDAP column represents EV/EBITDA valuation.
- BMW**, **Peugeot**, **Renault**, and **VW**: JPM European Auto estimates. Pension underfunding is not tax effected. No Minimum cash assumption in valuation. EV/EBITDAP column represents EV/EBITDA valuation.
- Pension nos for the companies are the last reported nos from annual reports. Pension expense added in EBITDA to calculate EV/EBITDAP ratio for all the companies.
- OW=Overweight, N=Neutral, UW=Underweight, NR=Not Rated, NC=Not Covered.

Auto Parts Supplier Valuation Comps

| Company | Ticker | Latest Price | Basic Shares | Market Cap | Latest Debt | Latest Cash | Net Debt | Post-Tax Pension | Equity Stakes | NCI | EV | Sales | | | EBITDA | | | | EPS | | |
|----------------------------------|--------|--------------|--------------|------------|-------------|-------------|----------|------------------|---------------|------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|
| | | | | | | | | | | | | 2017 | 2018 | 2019 | NTM | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 |
| US Suppliers | | | | | | | | | | | | | | | | | | | | | |
| Adient | ADNT | 42.45 | 93 | 3,964 | 3,676 | 353 | 3,323 | 109 | 0 | 834 | 8,230 | 16,412 | 17,600 | 17,655 | 959 | 1,507 | 1,284 | 1,476 | 8.42 | 6.06 | 8.13 |
| American Axle | AXL | 16.24 | 112 | 1,814 | 3,906 | 353 | 3,553 | 75 | 0 | 0 | 5,442 | 6,266 | 7,237 | 7,185 | 1,250 | 1,103 | 1,287 | 1,254 | 3.74 | 4.10 | 3.80 |
| Aptiv | APTV | 92.77 | 265 | 24,560 | 4,089 | 971 | 3,118 | 352 | -277 | 487 | 28,240 | 16,383 | 14,364 | 15,481 | 2,516 | 2,210 | 2,398 | 2,627 | NA | 5.34 | 6.00 |
| Autoliv | ALV | 94.14 | 87 | 8,203 | 2,284 | 508 | 1,776 | 208 | -508 | -300 | 9,379 | 8,137 | 9,038 | 9,592 | 1,376 | 1,197 | 1,337 | 1,490 | 6.91 | 8.08 | 9.10 |
| Borg Warner | BWA | 43.91 | 209 | 9,171 | 2,173 | 382 | 1,811 | 122 | -515 | 464 | 11,053 | 9,799 | 10,733 | 11,560 | 1,884 | 1,627 | 1,790 | 1,970 | 3.89 | 4.51 | 4.86 |
| Dana Inc | DAN | 19.51 | 147 | 2,866 | 1,809 | 376 | 1,433 | 340 | -180 | 240 | 4,699 | 7,209 | 8,050 | 8,293 | 1,009 | 835 | 978 | 1,041 | 2.52 | 2.95 | 3.30 |
| Gentex | GNTX | 23.26 | 269 | 6,255 | 23 | 609 | -586 | 0 | 0 | 0 | 5,669 | 1,795 | 1,905 | 2,046 | 678 | 623 | 654 | 693 | 1.41 | 1.72 | 1.90 |
| Gentherm | THRM | 45.80 | 36 | 1,670 | 113 | 65 | 48 | 3 | 0 | 0 | 1,720 | 986 | 1,063 | 1,127 | 161 | 147 | 151 | 170 | 1.42 | 2.10 | 2.60 |
| Lear Corp | LEA | 170.86 | 66 | 11,193 | 1,960 | 1,328 | 632 | 137 | -395 | 892 | 12,459 | 20,467 | 21,852 | 21,676 | 2,247 | 2,147 | 2,284 | 2,300 | 17.01 | 18.90 | 20.41 |
| Magna | MGA | 53.09 | 347 | 18,404 | 3,596 | 885 | 2,711 | 424 | -3,640 | 550 | 18,449 | 36,695 | 42,552 | 45,014 | 4,564 | 4,020 | 4,516 | 4,643 | 6.25 | 7.04 | 7.80 |
| Meritor Inc. | MTOR | 21.22 | 86 | 1,835 | 776 | 350 | 426 | 172 | -305 | 18 | 2,145 | 3,551 | 4,255 | 4,344 | 480 | 339 | 467 | 480 | 2.23 | 3.16 | 3.49 |
| Tenneco | TEN | 42.69 | 51 | 2,195 | 1,459 | 103 | 1,356 | 97 | 0 | 768 | 4,416 | 9,274 | 10,063 | 10,668 | 918 | 868 | 883 | 958 | 6.89 | 7.00 | 8.00 |
| Tower | TOWR | 32.80 | 21 | 676 | 373 | 72 | 301 | 40 | 0 | 0 | 1,017 | 1,988 | 2,174 | 2,269 | 238 | 210 | 229 | 242 | 3.76 | 4.08 | 4.67 |
| Visteon | VC | 114.46 | 29 | 3,361 | 378 | 502 | -124 | 289 | 0 | 160 | 3,686 | 3,146 | 3,135 | 3,241 | 370 | 370 | 374 | 413 | 6.16 | 6.95 | 8.05 |
| Europe Suppliers (in EUR) | | | | | | | | | | | | | | | | | | | | | |
| Brembo | BRE IM | 11.31 | 334 | 3,777 | 526 | 263 | 263 | 12 | NA | 41 | 4,092 | 2,447 | 2,645 | 2,816 | NA | 479 | 515 | 552 | 0.84 | 0.84 | 0.91 |
| Continental | CON GR | 187.55 | 200 | 37,511 | 4,090 | 2,480 | 1,610 | 4,103 | -415 | 462 | 43,271 | 44,436 | 46,254 | 49,131 | NA | 7,026 | 7,094 | 7,660 | 15.95 | 16.26 | 17.95 |
| Faurecia | EO FP | 54.66 | 138 | 7,545 | 2,022 | 1,563 | 459 | 365 | -151 | 275 | 8,493 | 16,857 | 17,939 | 18,936 | NA | 1,855 | 2,010 | 2,164 | 4.36 | 5.32 | 5.97 |
| Valeo | FR FP | 41.37 | 240 | 9,939 | 3,542 | 1,772 | 1,770 | 906 | -459 | 649 | 12,805 | 19,108 | 19,836 | 21,759 | NA | 2,556 | 2,595 | 3,071 | 3.72 | 4.17 | 5.09 |

| Company | Ticker | Rating | Latest Price | Dec-18 Target | Upside / Downside | Gross Debt/EBITDA | | | EBITDA Margin | | | FCF Yield | | | EV / EBITDAP | | | | P / E | | |
|----------------------------------|----------------|--------|--------------|---------------|-------------------|-------------------|-------------|-------------|---------------|--------------|--------------|-----------|-----------|-----------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|
| | | | | | | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | NTM | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 |
| US Suppliers | | | | | | | | | | | | | | | | | | | | | |
| Adient | ADNT | UW | 42.45 | 47.00 | 11% | 2.4x | 2.9x | 2.5x | 6.7% | 5.1% | 6.0% | 3% | 10% | 9% | 5.4x | 4.2x | 6.0x | 4.8x | 5.0x | 7.0x | 5.2x |
| American Axle | AXL | OW | 16.24 | 25.00 | 54% | 3.5x | 3.0x | 3.1x | 17.6% | 17.8% | 17.5% | 9% | 11% | 16% | 4.4x | 5.0x | 4.3x | 4.4x | 4.3x | 4.0x | 4.3x |
| Aptiv | APTV | OW | 92.77 | 108.00 | 16% | 1.9x | 1.7x | 1.6x | 13.5% | 16.7% | 17.0% | NA | 3% | 4% | 11.1x | 12.7x | 11.7x | 10.7x | NA | 17.4x | 15.5x |
| Autoliv | ALV | N | 94.14 | 106.00 | 13% | 1.9x | 1.7x | 1.5x | 14.7% | 14.8% | 15.5% | 5% | 2% | 7% | 6.8x | 7.8x | 7.0x | 6.3x | 13.6x | 11.6x | 10.3x |
| Borg Warner | BWA | OW | 43.91 | 64.00 | 46% | 1.3x | 1.2x | 1.1x | 16.6% | 16.7% | 17.0% | 7% | 5% | 7% | 5.9x | 6.8x | 6.2x | 5.6x | 11.3x | 9.7x | 9.0x |
| Dana Inc | DAN | N | 19.51 | 24.00 | 23% | 2.2x | 1.8x | 1.7x | 11.6% | 12.2% | 12.6% | 6% | 10% | 11% | 4.7x | 5.7x | 4.8x | 4.5x | 7.7x | 6.6x | 5.9x |
| Gentex | GNTX | N | 23.26 | 25.00 | 7% | 0.0x | 0.0x | 0.0x | 34.7% | 34.3% | 33.9% | 6% | 8% | 7% | 8.4x | 9.1x | 8.7x | 8.2x | 16.5x | 13.5x | 12.2x |
| Gentherm | THRM | OW | 45.80 | 50.00 | 9% | 0.8x | 0.7x | 0.7x | 15.0% | 14.2% | 15.1% | 0% | 5% | 3% | 10.7x | 11.7x | 11.4x | 10.1x | 32.2x | 21.9x | 17.6x |
| Lear Corp | LEA | N | 170.86 | 198.00 | 16% | 0.9x | 0.9x | 0.9x | 10.5% | 10.5% | 10.6% | 11% | 10% | 11% | 5.5x | 5.7x | 5.4x | 5.4x | 10.0x | 9.0x | 8.4x |
| Magna | MGA | OW | 53.09 | 74.00 | 39% | 0.9x | 0.8x | 0.8x | 11.0% | 10.6% | 10.3% | 8% | 11% | 11% | 4.0x | 4.6x | 4.1x | 4.0x | 8.5x | 7.5x | 6.8x |
| Meritor Inc. | MTOR | N | 21.22 | 24.00 | 13% | 2.3x | 1.7x | 1.6x | 9.5% | 11.0% | 11.1% | 7% | 4% | 8% | 4.6x | 6.6x | 4.7x | 4.6x | 9.5x | 6.7x | 6.1x |
| Tenneco | TEN | NC | 42.69 | NA | NA | 1.7x | 1.7x | 1.5x | 9.4% | 8.8% | 9.0% | 11% | 2% | 10% | 4.8x | 5.1x | 5.0x | 4.6x | 6.2x | 6.1x | 5.3x |
| Tower | TOWR | N | 32.80 | 33.00 | 1% | 1.8x | 1.6x | 1.5x | 10.5% | 10.5% | 10.7% | 9% | 8% | 11% | 4.3x | 4.8x | 4.4x | 4.2x | 8.7x | 8.0x | 7.0x |
| Visteon | VC | N | 114.46 | 124.00 | 8% | 1.0x | 1.0x | 0.9x | 11.8% | 11.9% | 12.8% | 4% | 4% | 6% | 10.0x | 10.0x | 9.9x | 8.9x | 18.6x | 16.5x | 14.2x |
| US Avg. | Average | | | | 20% | 1.6x | 1.5x | 1.4x | 13.8% | 13.9% | 14.2% | 7% | 7% | 9% | 6.5x | 7.1x | 6.7x | 6.2x | 11.7x | 10.4x | 9.1x |
| Europe Suppliers (in EUR) | | | | | | | | | | | | | | | | | | | | | |
| Brembo | BRE IM | NC | 11.31 | NA | NA | 1.1x | 1.0x | 1.0x | 19.6% | 19.5% | 19.6% | 4% | 4% | 5% | NA | 8.5x | 7.9x | 7.4x | 13.4x | 13.5x | 12.5x |
| Continental | CON GR | OW | 187.55 | 240.00 | 28% | 0.6x | 0.6x | 0.5x | 15.8% | 15.3% | 15.6% | 5% | 6% | 0% | NA | 6.2x | 6.1x | 5.6x | 11.8x | 11.5x | 10.5x |
| Faurecia | EO FP | OW | 54.66 | 93.00 | 70% | 1.1x | 1.0x | 0.9x | 11.0% | 11.2% | 11.4% | 5% | 5% | 0% | NA | 4.6x | 4.2x | 3.9x | 12.5x | 10.3x | 9.2x |
| Valeo | FR FP | OW | 41.37 | 67.00 | 62% | 1.4x | 1.4x | 1.2x | 13.4% | 13.1% | 14.1% | -7% | 3% | 0% | NA | 5.0x | 4.9x | 4.2x | 11.1x | 9.9x | 8.1x |
| Europe Avg. | | | | | 53% | 1.0x | 1.0x | 0.9x | 14.9% | 14.8% | 15.2% | 2% | 5% | 1% | NA | 6.1x | 5.8x | 5.3x | 12.2x | 11.3x | 10.1x |
| US & Europe Avg. | | | | | 26% | 1.5x | 1.4x | 1.3x | 14.0% | 14.1% | 14.4% | 5% | 6% | 7% | 6.5x | 6.9x | 6.5x | 6.0x | 11.8x | 10.6x | 9.3x |

Source: Company reports, Bloomberg and J.P. Morgan estimates. All data are represented on a calendarized basis.

a) **Equity stakes and non-controlling interests** are valued separately, using a 10x multiple. EBITDA estimates don't include equity income or non-controlling interest expense.

b) **MBLY and ST** valuation multiples are excluded in average supplier multiple calculation.

c) **Continental, Faurecia, GKN, and Valeo**: J.P. Morgan European Autos and Capital Goods Team estimates. Pension underfunding is not tax effected. EV/EBITDAP column represents EV/EBITDA valuation.

d) **VC** - Pension underfunding used in EV not adjusted for tax.

e) OW=Overweight, N=Neutral, UW=Underweight, NR=Not Rated, NC=Not Covered.

Auto Auction Valuation Comps

| Company | Company Type | Ticker | Latest Price | Basic Shares | Market Cap | Latest Debt | Latest Cash | Net Debt | Equity Stakes | NCI | EV | Sales | | | EBITDA | | | | EBIT | | | EPS | | | FCF | | |
|-------------------------|-----------------------|--------|--------------|--------------|------------|-------------|-------------|----------|---------------|-----|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|
| | | | | | | | | | | | | 2017 | 2018 | 2019 | NTM | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 |
| US Auto Auction | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KAR Auction Services | Auto Auction | KAR | 61.29 | 134 | 8,231 | 2,681 | 337 | 2,345 | 0 | 0 | 10,575 | 3,458 | 3,673 | 3,870 | 921 | 838 | 897 | 976 | 566 | 621 | 683 | 2.48 | 3.02 | 3.30 | 443 | 484 | 531 |
| Copart Inc. | Auto Auction | CPRT | 59.30 | 232 | 13,774 | 400 | 204 | 196 | 0 | 0 | 13,970 | 1,631 | 1,822 | 1,932 | 712 | 603 | 700 | 749 | 542 | 633 | 680 | 1.51 | 1.94 | 2.15 | 336 | 347 | 429 |
| US Auto Auction Related | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CarMax | Auto Retail / Auction | KMX | 72.39 | 177 | 12,781 | 301 | 28 | 273 | NA | 0 | 13,055 | 15,781 | 17,200 | 18,204 | NA | 1,222 | 1,341 | 1,345 | 1,067 | 1,161 | 1,151 | 3.28 | 3.84 | 4.60 | 102 | 158 | -202 |
| LKQ Corp. | Auto Recycler | LKQ | 33.18 | 318 | 10,554 | 4,439 | 345 | 4,093 | 0 | 0 | 14,647 | 9,737 | 11,978 | 13,040 | 1,387 | 1,116 | 1,279 | 1,447 | 122 | 144 | 0 | 1.88 | 2.31 | 2.66 | 340 | 410 | 689 |
| Ritchie Bros. | Industrial Auction | RBA | 37.72 | 108 | 4,082 | 820 | 268 | 552 | NA | 0 | 4,634 | 600 | 1,121 | 1,201 | NA | 184 | 256 | 287 | 132 | 198 | 222 | 0.79 | 1.11 | 1.36 | 69 | 157 | 202 |

| Company | Company Type | Ticker | Rating | Latest Price | Dec-18 Target | Upside / Downside | Gross Debt/EBITDA | | | EBITDA Margin | | | EV / Sales | | | EV / EBITDA | | | | P / E | | | Relative P / E | | | FCF Yield | | |
|------------------------------|-----------------------|--------|--------|--------------|---------------|-------------------|-------------------|------|------|---------------|-------|-------|------------|------|------|-------------|-------|-------|-------|-------|-------|-------|----------------|------|------|-----------|------|------|
| | | | | | | | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | NTM | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 |
| US Auto Auction | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KAR Auction Services | Auto Auction | KAR | OW | 61.29 | 63.00 | 3% | 3.2x | 3.0x | 2.7x | 24.2% | 24.4% | 25.2% | 306% | 288% | 273% | 11.5x | 12.6x | 11.8x | 10.8x | 24.7x | 20.3x | 18.6x | 156% | 141% | 129% | 5% | 6% | 6% |
| Copart Inc. | Auto Auction | CPRT | N | 59.30 | 48.00 | -19% | 0.7x | 0.6x | 0.5x | 37.0% | 38.4% | 38.8% | 857% | 767% | 723% | 19.6x | 23.2x | 20.0x | 18.6x | 39.3x | 30.6x | 27.6x | 248% | 213% | 192% | 2% | 3% | 3% |
| US Auto Auction Avg. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | -8% | 1.9x | 1.8x | 1.6x | 30.6% | 31.4% | 32.0% | 581% | 527% | 498% | 15.5x | 17.9x | 15.9x | 14.7x | 32.0x | 25.5x | 23.1x | 202% | 177% | 160% | 4% | 4% | 5% |
| US Auto Auction Related | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CarMax | Auto Retail / Auction | KMX | NC | 72.39 | NA | NA | 0.2x | 0.2x | 0.2x | 7.7% | 7.8% | 7.4% | 83% | 76% | 72% | NA | 10.7x | 9.7x | 9.7x | 22.1x | 18.8x | 15.8x | 139% | 131% | 109% | 1% | 1% | -2% |
| LKQ | Auto Recycler | LKQ | OW | 33.18 | 44.00 | 33% | 4.0x | 3.5x | 3.1x | 11.5% | 10.7% | 11.1% | 150% | 122% | 112% | 10.6x | 13.1x | 11.5x | 10.1x | 17.7x | 14.4x | 12.5x | 112% | 100% | 86% | 3% | 4% | 7% |
| Ritchie Bros. | Industrial Auction | RBA | NC | 37.72 | NA | NA | 4.5x | 3.2x | 2.9x | 30.7% | 22.8% | 23.9% | 772% | 413% | 386% | NA | 25.2x | 18.1x | 16.1x | 47.9x | 33.9x | 27.7x | 302% | 235% | 192% | 2% | 4% | 5% |
| US Auto Auction Related Avg. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 2.9x | 2.3x | 2.0x | 16.6% | 13.8% | 14.1% | 335% | 204% | 190% | NA | 16.3x | 13.1x | 12.0x | 29.2x | 22.4x | 18.6x | 184% | 155% | 129% | 2% | 3% | 3% |
| US Auto Auction Related Avg. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 2.5x | 2.1x | 1.9x | 22.2% | 20.8% | 21.3% | 434% | 333% | 313% | NA | 17.0x | 14.2x | 13.1x | 30.3x | 23.6x | 20.4x | 191% | 164% | 142% | 3% | 3% | 4% |

Tire Manufacturers Valuation Comps

| Ticker | Latest Price | Basic Shares | Market Cap | Latest Debt | Latest Cash | Net Debt | Post-Tax Pension | Equity Stakes | NCI | EV | 2017 Sales | 2018 Sales | 2019 Sales | EBITDA NTM | 2017 EBITDA | 2018 EBITDA | 2019 EBITDA | 2017 EPS | 2018 EPS | 2019 EPS |
|-----------------------|--------------|--------------|------------|-------------|-------------|----------|------------------|---------------|-----|---------|------------|------------|------------|------------|-------------|-------------|-------------|----------|----------|----------|
| US Tires | | | | | | | | | | | | | | | | | | | | |
| Cooper Tire CTB | 28.95 | 50 | 1,449 | 344 | 186 | 158 | 320 | 0 | 38 | 1,965 | 2,855 | 2,911 | 3,047 | 380 | 412 | 315 | 390 | 3.10 | 1.50 | 2.80 |
| Goodyear Tire GT | 23.55 | 237 | 5,582 | 6,347 | 975 | 5,372 | 704 | 0 | 280 | 11,937 | 15,400 | 15,652 | 15,904 | 2,462 | 2,195 | 2,158 | 2,578 | 3.11 | 2.92 | 4.15 |
| European Tires | | | | | | | | | | | | | | | | | | | | |
| Continental CON GR | 187.6 | 200 | 37,511 | 4,090 | 2,480 | 1,610 | 4,103 | -415 | 462 | 43,271 | 44,436 | 46,254 | 49,131 | NA | 7,026 | 7,094 | 7,660 | 15.95 | 16.26 | 17.95 |
| Michelin ML FP | 110.5 | 179 | 19,777 | 2,859 | 2,058 | 801 | 3,969 | -356 | 35 | 24,226 | 21,960 | 21,424 | NA | NA | 4,087 | 4,046 | NA | 9.40 | 9.37 | NA |
| Japanese | | | | | | | | | | | | | | | | | | | | |
| Bridgestone 5108 JT | 4,135.0 | 762 | 3,149 | 436 | 581 | -145 | NA | NA | NA | 3,004 | 3,643 | 3,735 | 3,861 | NA | 631 | 649 | 680 | 389 | 401 | 425 |
| Toyo 5105 JT | 1,695.0 | 127 | 216 | 138 | 33 | 104 | NA | NA | NA | 320 | 402 | 400 | 420 | NA | 77 | 73 | 81 | 172 | 212 | 250 |
| Yokohama 5101 JT | 2,296.0 | 170 | 389 | 172 | 36 | 136 | NA | NA | NA | 526 | 661 | 671 | 691 | NA | 87 | 98 | 103 | 204 | 261 | 275 |
| Other Asian | | | | | | | | | | | | | | | | | | | | |
| Apollo Apty IN | 261.6 | 572 | 149,620 | 9,888 | 6,447 | 3,441 | NA | NA | NA | 153,061 | 131,991 | 148,229 | 175,260 | NA | 18,852 | 16,564 | 22,692 | 22 | 13 | 19 |
| Hankook 161390 KS | 45,250.0 | 124 | 5,605 | 2,420 | 601 | 1,819 | NA | NA | NA | 7,425 | 6,869 | 7,421 | 7,908 | NA | 1,512 | 1,740 | 1,834 | 5,990 | 7,589 | 8,362 |

| Company | Ticker | Rating | Latest | Dec-18 | Upside / | Gross Debt/EBITDA | | | EBITDA Margin | | | EV/Sales | | | EV / EBITDAP | | | | P/E | | |
|-----------------------|-----------|--------|----------|----------|----------|-------------------|------|------|---------------|-------|-------|----------|------|------|--------------|------|------|------|-------|-------|-------|
| | | | Price | Target | Downside | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 | NTM | 2017 | 2018 | 2019 | 2017 | 2018 | 2019 |
| US Tires | | | | | | | | | | | | | | | | | | | | | |
| Cooper Tire | CTB | OW | 28.95 | 33.00 | 14% | 0.8x | 1.1x | 0.9x | 14.4% | 10.8% | 12.8% | 69% | 68% | 65% | 5.2x | 4.8x | 6.2x | 5.0x | 9.3x | 19.3x | 10.3x |
| Goodyear Tire | GT | OW | 23.55 | 33.00 | 40% | 2.9x | 2.9x | 2.5x | 14.3% | 13.8% | 16.2% | 78% | 76% | 75% | 4.8x | 5.4x | 5.5x | 4.6x | 7.6x | 8.1x | 5.7x |
| European Tires | | | | | | | | | | | | | | | | | | | | | |
| Continental | CON GR | OW | 187.6 | 240.0 | 28% | 0.6x | 0.6x | 0.5x | 15.8% | 15.3% | 15.6% | 97% | 94% | 88% | NA | 6.2x | 6.1x | 5.6x | 11.8x | 11.5x | 10.5x |
| Michelin | ML FP | OW | 110.5 | 130.0 | 18% | 0.7x | 0.7x | NA | 18.6% | 18.9% | NA | 110% | 113% | NA | NA | 5.9x | 6.0x | NA | 11.8x | 11.8x | NA |
| Japanese | | | | | | | | | | | | | | | | | | | | | |
| Bridgestone | 5108 JT | N | 4,135.0 | 4,300.0 | 4% | 0.7x | 0.7x | 0.6x | 17.3% | 17.4% | 17.6% | 82% | 80% | 78% | NA | 4.8x | 4.6x | 4.4x | 10.6x | 10.3x | 9.7x |
| Toyo | 5105 JT | OW | 1,695.0 | 2,350.00 | 39% | 1.8x | 1.9x | 1.7x | 19.1% | 18.3% | 19.3% | 80% | 80% | 76% | NA | 4.2x | 4.4x | 4.0x | 9.8x | 8.0x | 6.8x |
| Yokohama | 5101 JT | NC | 2,296.0 | NA | NA | 2.0x | 1.8x | 1.7x | 13.1% | 14.5% | 14.9% | 80% | 78% | 76% | NA | 6.1x | 5.4x | 5.1x | 11.2x | 8.8x | 8.3x |
| Other Asian | | | | | | | | | | | | | | | | | | | | | |
| Apollo | Apty IN | NC | 261.6 | NA | NA | 0.5x | 0.6x | 0.4x | 14.3% | 11.2% | 12.9% | 116% | 103% | 87% | NA | 8.1x | 9.2x | 6.7x | 12.1x | 19.8x | 13.9x |
| Hankook | 161390 KS | OW | 45,250.0 | 65,000.0 | 44% | 1.6x | 1.4x | 1.3x | 22.0% | 23.4% | 23.2% | 108% | 100% | 94% | NA | 4.9x | 4.3x | 4.0x | 7.6x | 6.0x | 5.4x |

Source: Company reports, Bloomberg and J.P. Morgan estimates. Notes: All data are represented on a calendarized basis. OW=Overweight, N=Neutral, UW=Underweight, NR=Not Rated, NC=Not Covered. Note: Bridgestone, Sumitomo, Toyo Rubber, Yokohama and Apollo estimates are sourced from Bloomberg.

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