

June 5, 2012

## MORGAN STANLEY BLUE PAPER



## Global Auto Scenarios 2022

### Disruption and Opportunity Starts Now

**Auto companies routinely think 10 years ahead, and so should investors.** A decade is less than two product cycles and less than one engineering cycle for a powertrain. Most cars being developed today will still be on sale by 2022. Our global auto team has collaborated to measure how critical uncertainties (oil price, GDP, EM vs. DM growth, technology) will influence the future of the industry through scenario analysis, ranking the best-positioned and potentially challenged firms. The outcomes reveal some surprising differences in the value of the industry and who comes out on top.

**If our conclusions prove right, VW and BMW offer an outstanding long-term investment opportunity as current valuations do not reflect their strong positioning.** GM's large lead over Ford surprised us, standing in sharp contrast to today's investor perceptions. BorgWarner and Tesla ranked high in some scenarios yet far lower in others. Great Wall screens as the best of the EM, yet still ranks below the industry median. Toyota and Nissan make the top quintile with a substantial lead over Honda. Hyundai has a place among the leaders as does MOBIS and Halla. European volume players and non-J3 Japanese OEMs ranked low overall, suggesting high investment risk or strategic changes ahead.

**Valuations today do not reflect what we see as the best way to play the long-term trends.** We find large discrepancies—even negative correlations—between valuations and rankings, suggesting the market's concentration on near-term issues leaves tremendous alpha-generating opportunities longer-term. Some of the best-positioned auto stocks happen to be the cheapest. Such anomalies won't last.

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## The Auto Industry in 2022: Scenarios & Player Rankings

**Ranking the global auto stocks.** Morgan Stanley’s 18-member global auto team set out to reset its long-term view of the industry and the stocks. Over a series of meetings in April and May 2012, we debated the forces that will change the industry, hammered out four scenarios for different states of the world, and tentatively identified the best- and worst-positioned companies.

To make our rankings more rigorous, each member of the team rated the top 60 market cap companies under coverage. In the survey, we asked people to rate each company (1 through 5, 1 being best) under each scenario on four criteria: technology (intellectual property and engineering capability), geographic footprint, strategic positioning, and financial strength. We compiled the ratings (more than 17,000 data points) to come up with company rankings — and some surprising results that rarely correlate with 2013 PEs.

**Our results challenge the established order — essential to know for investors planning 10 years out:**

**Best-positioned: Volkswagen, most challenged: Peugeot.** From the competitive crucible of Europe emerge the world’s highest (VW) and lowest (PSA) ranking auto companies. Is Volkswagen’s drive for scale the cause of Peugeot’s

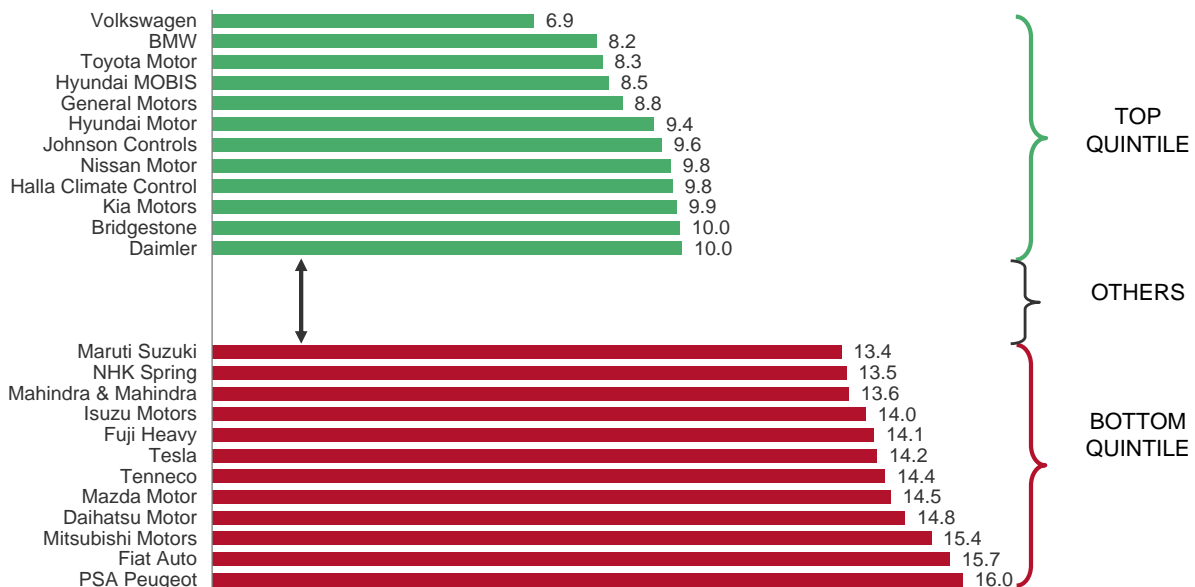
weakness? BMW’s reputation as the “ultimate driving machine” has vaulted it into contention as the ultimate auto company, trailing only VW. Yet VW and BMW are among the cheapest stocks in the industry. Daimler consistently lagged its German peers in our scenario rankings.

**Surprises among the suppliers.** The Korean tier-1 suppliers (Halla, MOBIS) ranked well, reflecting relevant technology and geographic footprint. BorgWarner, one of the world’s strongest suppliers today, ranks surprisingly, coming in near the median overall. JCI’s rank as the second-best auto supplier contrasts sharply with its current very low investor sentiment. And who would have picked once bankrupt Delphi to rank near the top quintile, in a dead heat with Continental?

**Ford and General Motors: Perception vs. our rankings.** In the US, Ford is widely believed to be the class of Detroit, yet ranks well below GM in all scenarios due to its lagging geographic footprint. From Japan, only Toyota and Nissan rank with the leaders, while Honda lags far behind. The non-J3 OEMs rank in the bottom quintile, which could be a portent of structural changes ahead. Hyundai and Kia can claim spots amongst the best, but have room to improve in many categories. Tesla screens near the top in our Electric Avenue scenario, while far lower in all others.

Exhibit 1

**Top and bottom quintiles (1 = highest, 5 = lowest): Average ranking of auto companies across four scenarios**  
Top 12 vs. Bottom 12



Source: Company Data, Morgan Stanley Research

## Scenarios Sharpened Our Focus on 2022

**We began with a framework from corporate strategy.** After the 1967 war in the Middle East, executives at Shell realized that oil prices could spike. Their goal was to prepare for all plausible outcomes, not just the most probable one. They used hypothetical scenarios to “re-perceive” the future after an oil shock, including a low-growth oil industry, an OPEC takeover of the oilfields, and a range of other market-moving forces in the world. Events after the 1972 Arab-Israeli conflict proved them right, and their work spawned multiple scenario-building techniques over the following decades.

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### The key question: What will future demand for mobility look like and what technology and infrastructure can enable it?

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**We chose a matrix approach for the uncertainties facing auto companies over the next decade.** This process works when multiple uncertainties are moving independently (“orthogonality”). Then only the forces with the highest impact matter. The 18 members of our global autos team first identified nearly 60 uncertainties, forces, and drivers of change. Winnowing this list down over several roundtable sessions produced two axes of uncertainty: technology – does it add or subtract value to the industry? And market leadership, i.e. who sets the pace for the industry, developed markets (DM) or emerging markets (EM)? These uncertainties are structural and unprecedented. They frame the key question for autos: What will future demand for mobility look like and what technology and infrastructure can enable it?

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#### Best-Positioned and Challenged Companies Against Our Four Judgment Criteria

**Technology:** VW was the category winner, followed by Toyota, and Johnson Controls.

**Global footprint:** VW won this category, with a four-way tie for second between BMW, Toyota, GM and Hyundai MOBIS.

**Financial strength:** VW is the category leader, followed by BMW and Toyota.

**Strategic focus.** VW completed its sweep, winning this category as well, followed by Hyundai MOBIS and Nissan.

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## Our Four Scenarios

On the next page, we lay out the four scenarios we believe will determine the future of auto stocks in 2022:

- Detroit Revolution:** Incumbent technology and incumbent players dominate. Internal combustion engine (ICE) innovation and better vehicle content drives replacement of the existing auto population in the development markets, increasing sales volumes. In emerging markets, high congestion and technology costs lead to a focus on mass transit, limiting the growth of personal vehicle demand. EVs relegated to niche status as advanced ICE and hybrid technology compete away the relative payback economies
- Electric Avenue:** An energy price shock leads to rapid adoption of alternative power trains, including electric vehicles (EVs) and fuel cells. Vehicles become too expensive to buy and operate for EM mass ownership. Modern communications allow more efficient car sharing. With less direct vehicle ownership, the value proposition shifts away from the auto industry toward information technology providers. High technology costs limit DM ownership as well. Mass transit takes the place of individual mobility.
- If You Can't Beat EM, Join EM:** Surging growth in EM economies lift energy costs, but demand for individual mobility also spirals. EM players methodically transplant production to DM to navigate protectionism. Select DM players transplant design and product to more profitable EM regions. DM demand suffers from high fuel costs, while technological know-how shifts from DM to EM players. EM companies acquire DM brands, helping them offer high technology (including EVs) at premium prices to an increasingly affluent customer base.
- Walmart on Wheels:** Frugal engineering and low fuel prices drive increased sales of affordable cars in EM. Local OEMs gain huge scale, driving down prices and increasing penetration but commoditizing cars to white-good status. EM companies export cheap cars in high volumes to DM, where incumbent OEMs struggle to compete. Only the biggest OEMs can survive.

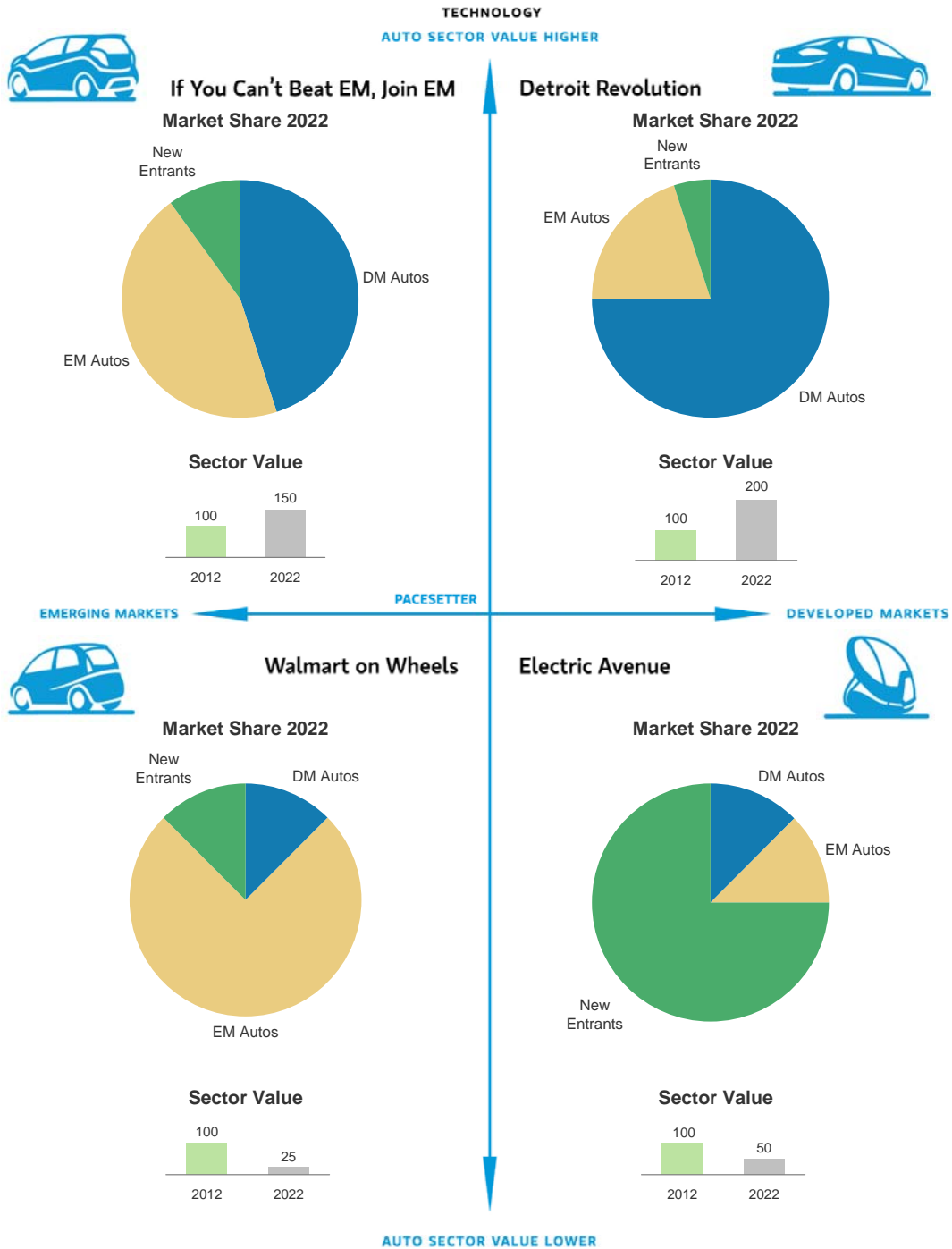
Exhibit 2  
**Global Autos 2022: Four Possible Futures**



Source: Morgan Stanley Research

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Exhibit 3  
**Global Autos 2022: Market Share Potential**



Source: Morgan Stanley Research

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## 2022 Scenarios vs. 2013 PE Multiples

- No correlation** Our first observation is there is practically no correlation (R-squared = 0.01) between 2013 PE multiple and positioning score. In fact, the average PE of the top quintile (6.4x) is materially lower than the average PE of the bottom quintile (6.9x).
- Overall global winner VW trades at only 4.7x PE, more than a 30% discount** to the global industry average 2013 PE multiple of 7.1x. BMW, the second-ranked player overall, trades at over a 10% discount. Interestingly, the most expensive stock in the top quintile is Johnson Controls, but this trades at only 8.2x PE, hardly expensive in absolute or relative terms. Either the attributes of this winning group are significantly underappreciated by the market, or investors are trading on shorter-term concerns.

Regardless, we are encouraged to find the best-positioned auto companies longer-term trading at such attractive valuation shorter term. If our scenario predictions and qualitative assessment are correct, there appears to be significant alpha left on the table for long-term investors.

- Worst-positioned for 2022 also among the cheapest in 2013.** The two worst-positioned auto companies (PSA and

Fiat) are two of the lowest-valued companies on forward year earnings in the sector at 2.9x and 3.6x PE respectively. Only Porsche and Renault rival these low valuations. This suggests companies that may be properly valued relative to their long-term positioning.

The 36 companies in the 2nd, 3rd and 4th quintiles span a wide range of valuations. Renault is the cheapest (2.3x PE, including Nissan affiliate earnings), while Brilliance is the most expensive at over 12 PE.

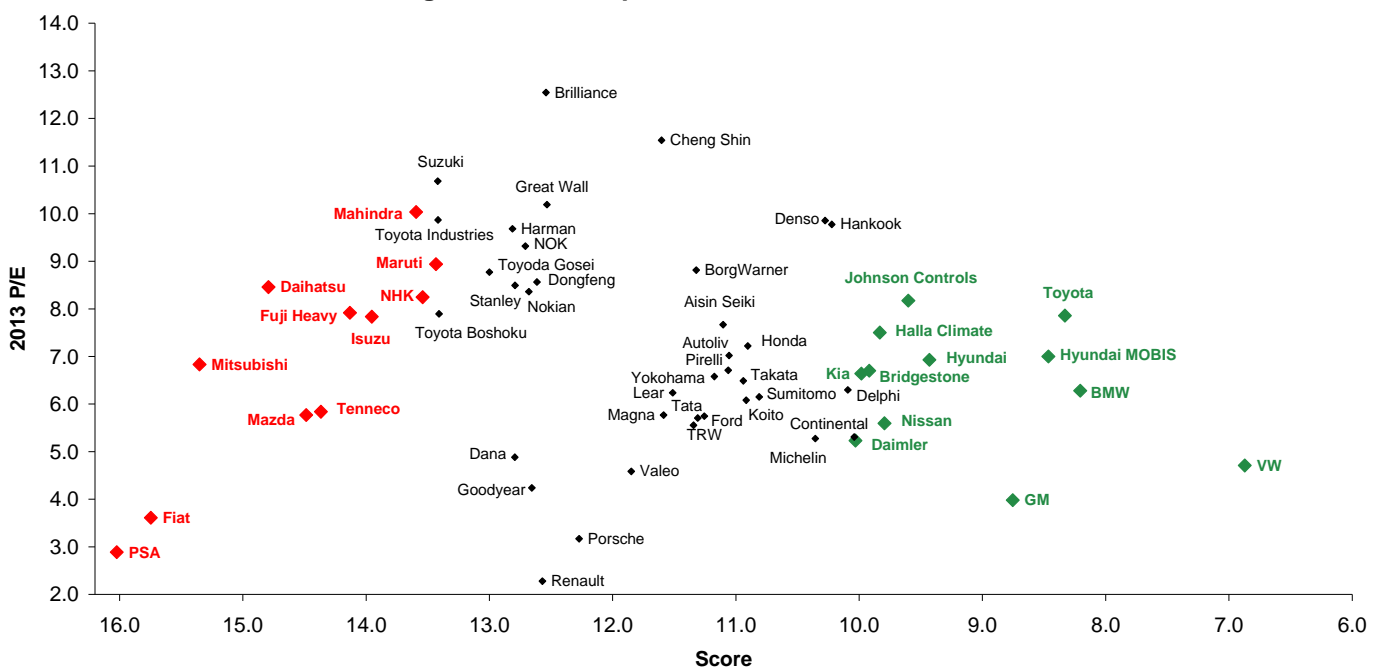
### How our top picks compare, by region:

**Europe:** VW screens as the world's best positioned automaker, trading at a valuation well below the sector average. Continental places best among suppliers, just outside the top quintile but at a very low valuation

**US:** GM screens in the top five automakers globally, with an even cheaper valuation than VW. BorgWarner ranked only just above the industry average, and is one of the most expensive stocks under coverage, yet still under 10x PE.

**Japan:** Toyota ranks 3<sup>rd</sup> overall, trading at a slight premium. Nissan is one of the cheaper OEMs in the top quintile.

Exhibit 4  
**Valuation anomalies between ratings and PE multiples**



**South Korea:** Kia, Hyundai MOBIS, and Hyundai Motor each made the top quintile with attractive valuations.

**China:** Great Wall ranks below average while trading at an above average PE.

**Ten years may be a longer than typical investment horizon, but it's a relatively short one in the auto industry.** It is less than two automotive product cycles and possibly one engineering cycle for advanced propulsion and global platform development. **Most cars being developed today will still be on sale by 2022.** Companies must plot a course for the decade ahead, and investors need to evaluate corporates' preparation and monitor their progress on the journey. We use the axes of technology and market leadership to create narratives about outcomes we view as plausible within a ten-year period.

**We offer this framework as "open-source" for investors who may wish to assign their own probabilities** and include other global developments and evidence that supports one quadrant vs. another. In theory, macro and industry events within the next 12 months could make any of the four quadrants seem the most likely outcome. Ultimately, we believe this framework can help:

- **Assess the key growth opportunities and risks** for the industry.
- **Frame events in real time** as clues to the industry's long-term direction.
- **Consider a 10-year view when valuing companies** on a trading multiple or DCF basis. How does current valuation align with a company's positioning for the long term?
- **Perform due diligence:** Hold companies to a higher standard. Does management get it?

**We invite readers to challenge our assumptions, our conclusions, and our company rankings.** We hope our long horizon provides a new basis for dialogue on companies' positioning and valuation. We expect the value of this framework to become clearer as signposts emerge and we measure industry reaction – or better yet, anticipation. Dramatic macro events may make one of our scenarios more topical for discussion and deeper analysis. New evidence may emerge from "off the grid" that forces us to rethink our axes of uncertainty. We aim to follow the lead of experienced investors – maintaining a disciplined approach while keeping an open mind.

## Exhibit 5

## Global Coverage Table

| North America              |    |       |        | 2012e EPS |    |      |        |
|----------------------------|----|-------|--------|-----------|----|------|--------|
|                            | MS | Cons  | % Diff |           | MS | Cons | % Diff |
| 1 BorgWarner Inc.          | OW | 5.70  | 5.53   | 3.0%      |    |      |        |
| 2 General Motors           | OW | 3.80  | 3.49   | 9.0%      |    |      |        |
| 3 TRW Automotive           | OW | 6.15  | 5.93   | 3.6%      |    |      |        |
| 4 Ford Motor               | OW | 1.52  | 1.49   | 2.0%      |    |      |        |
| 5 Johnson Controls         | OW | 2.75  | 2.72   | 1.2%      |    |      |        |
| 6 Delphi                   | OW | 3.85  | 3.79   | 1.8%      |    |      |        |
| 7 Avis Budget              | OW | 2.53  | 2.48   | 2.0%      |    |      |        |
| 8 Magna International      | OW | 5.20  | 4.94   | 5.2%      |    |      |        |
| 9 Hertz                    | OW | 1.36  | 1.33   | 2.0%      |    |      |        |
| 10 Dana                    | OW | 2.05  | 1.94   | 5.5%      |    |      |        |
| 11 Lear                    | OW | 5.45  | 5.30   | 2.9%      |    |      |        |
| 12 Zipcar                  | OW | 0.14  | 0.12   | 13.7%     |    |      |        |
| 13 Cooper                  | OW | 2.32  | 2.06   | 12.7%     |    |      |        |
| 14 Penske Automotive Group | OW | 2.26  | 2.16   | 4.5%      |    |      |        |
| 15 Meritor                 | OW | 1.25  | 1.19   | 5.1%      |    |      |        |
| 16 Tesla                   | UW | -2.90 | -2.44  | NM        |    |      |        |
| 17 Harman                  | UW | 2.95  | 2.94   | 0.3%      |    |      |        |
| 18 Goodyear                | UW | 2.05  | 1.96   | 4.7%      |    |      |        |
| 19 American Axle           | UW | 2.00  | 1.95   | 2.5%      |    |      |        |
| 20 Tenneco                 | UW | 3.25  | 3.30   | -1.6%     |    |      |        |
| 21 AutoNation              | UW | 2.30  | 2.33   | -1.2%     |    |      |        |
| 22 Group 1 Automotive      | UW | 4.19  | 4.49   | -6.6%     |    |      |        |
| Dollar Thrifty             | NR | 5.47  | 5.44   | 0.6%      |    |      |        |

| Europe             |    |       |        | 2012e EPS |    |      |        |
|--------------------|----|-------|--------|-----------|----|------|--------|
|                    | MS | Cons  | % Diff |           | MS | Cons | % Diff |
| 1 Volkswagen       | OW | 22.05 | 21.20  | 4.0%      |    |      |        |
| 2 BMW              | OW | 8.37  | 8.07   | 3.7%      |    |      |        |
| 3 Porsche          | OW | 9.67  | 9.80   | -1.4%     |    |      |        |
| 4 Continental      | OW | 10.00 | 9.30   | 7.5%      |    |      |        |
| 5 Valeo S.A.       | OW | 6.10  | 5.62   | 8.6%      |    |      |        |
| 6 Renault          | OW | 9.82  | 7.45   | 31.8%     |    |      |        |
| 7 Pirelli & C. SpA | OW | 1.00  | 0.95   | 5.2%      |    |      |        |
| 8 Fiat Industrial  | OW | 0.76  | 0.77   | -1.9%     |    |      |        |
| 9 PSA Peugeot      | OW | 1.15  | 0.73   | 56.9%     |    |      |        |
| 10 Daimler         | EW | 5.29  | 5.34   | -1.0%     |    |      |        |
| 11 Nokian Tyres    | EW | 2.97  | 3.00   | -0.9%     |    |      |        |
| 12 Volvo           | EW | 7.86  | 8.40   | -6.4%     |    |      |        |
| 13 Autoliv         | UW | 6.30  | 6.35   | -0.8%     |    |      |        |
| 14 Fiat Auto       | UW | 0.50  | 0.69   | -26.6%    |    |      |        |
| 15 Michelin        | UW | 7.68  | 7.69   | -0.1%     |    |      |        |

| Japan                |    |        |        | 2012e EPS |    |      |        |
|----------------------|----|--------|--------|-----------|----|------|--------|
|                      | MS | Cons   | % Diff |           | MS | Cons | % Diff |
| <b>OEMs</b>          |    |        |        |           |    |      |        |
| 1 Nissan Motor       | OW | 107.03 | 101.52 | 5.4%      |    |      |        |
| 2 Fuji Heavy         | OW | 63.06  | 66.01  | -4.5%     |    |      |        |
| 3 Toyota Motor       | OW | 286.77 | 284.05 | 1.0%      |    |      |        |
| 4 Suzuki Motor       | OW | 136.74 | 138.27 | -1.1%     |    |      |        |
| 5 Mazda Motor        | OW | 8.62   | 4.14   | 108.3%    |    |      |        |
| 6 Isuzu Motors       | OW | 43.96  | 48.06  | -8.5%     |    |      |        |
| 7 Yamaha Motor       | OW | 94.10  | 101.23 | -7.0%     |    |      |        |
| 8 Hino Motors        | EW | 78.29  | 54.58  | 43.4%     |    |      |        |
| 9 Daihatsu Motor     | UW | 160.81 | 158.67 | 1.3%      |    |      |        |
| 10 Honda Motor       | UW | 309.01 | 293.91 | 5.1%      |    |      |        |
| 11 Mitsubishi Motors | UW | 6.19   | 5.53   | 11.9%     |    |      |        |
| <b>Suppliers</b>     |    |        |        |           |    |      |        |
| 1 Calsonic Kansei    | OW | 59.33  | 60.43  | -1.8%     |    |      |        |
| 2 Bridgestone        | OW | 222.32 | 216.66 | 2.6%      |    |      |        |
| 3 Unipres            | OW | 340.35 | 297.97 | 14.2%     |    |      |        |
| 4 Kofu Mfg.          | OW | 136.28 | 141.06 | -3.4%     |    |      |        |
| 5 EREDY              | EW | 250.53 | 250.36 | 0.1%      |    |      |        |
| 6 Sumitomo Rubber    | EW | 125.03 | 128.60 | -2.8%     |    |      |        |
| 7 Assin Seiki        | EW | 291.36 | 281.99 | 3.3%      |    |      |        |
| 8 Toyota Industries  | EW | 189.37 | 192.53 | -1.6%     |    |      |        |
| 9 NHK Spring         | EW | 82.01  | 97.69  | -16.1%    |    |      |        |
| 10 NOK               | EW | 150.30 | 164.76 | -8.8%     |    |      |        |
| 11 Stanley Electric  | EW | 108.23 | 124.59 | -13.1%    |    |      |        |
| 12 Toyoda Gosei      | EW | 142.96 | 133.23 | 7.3%      |    |      |        |
| 13 Takata            | EW | 199.61 | 214.91 | -7.1%     |    |      |        |
| 14 Denso             | EW | 219.64 | 208.63 | 5.3%      |    |      |        |
| 15 Toyota Boshoku    | UW | 82.06  | 86.44  | -5.1%     |    |      |        |
| 16 Keihin            | UW | 135.21 | 162.17 | -16.6%    |    |      |        |

| China                 |    |      |        | 2012e EPS |    |      |        |
|-----------------------|----|------|--------|-----------|----|------|--------|
|                       | MS | Cons | % Diff |           | MS | Cons | % Diff |
| 1 Great Wall          | OW | 1.37 | 1.41   | -2.4%     |    |      |        |
| 2 Zhongsheng Group    | OW | 1.00 | 0.99   | 0.7%      |    |      |        |
| 3 Minih Group Limited | OW | 0.84 | 0.86   | -2.3%     |    |      |        |
| 4 Baoxin Auto         | OW | 0.71 | 0.62   | 15.8%     |    |      |        |
| 5 China Zenix         | OW | 9.96 | 9.94   | 0.2%      |    |      |        |
| 6 Dongfang            | EW | 1.36 | 1.32   | 3.2%      |    |      |        |
| 7 Weichai Power       | UW | 2.84 | 3.32   | -14.5%    |    |      |        |
| 8 Brilliance          | UW | 0.47 | 0.47   | -0.8%     |    |      |        |
| 9 Sinotruk            | UW | 0.33 | 0.40   | -18.3%    |    |      |        |

| India                 |    |        |        | 2012e EPS |    |      |        |
|-----------------------|----|--------|--------|-----------|----|------|--------|
|                       | MS | Cons   | % Diff |           | MS | Cons | % Diff |
| 1 Bajaj Auto          | OW | 118.10 | 119.01 | 0.1%      |    |      |        |
| 2 Maruti Suzuki       | OW | 100.55 | 86.65  | 16.0%     |    |      |        |
| 3 Mahindra & Mahindra | EW | 42.99  | 57.09  | -24.7%    |    |      |        |
| 4 Tata Motors         | EW | 34.34  | 40.29  | -14.8%    |    |      |        |
| 5 Exide Industries    | EW | 8.05   | 7.82   | 2.9%      |    |      |        |
| 6 TVS Motor           | EW | 4.21   | 4.87   | -13.5%    |    |      |        |
| 7 Hero MotoCorp       | UW | 132.43 | 138.06 | -4.1%     |    |      |        |
| 8 Ashok Leyland       | UW | 2.91   | 2.61   | 11.8%     |    |      |        |

| Korea                   |    |        |        | 2012e EPS |    |      |        |
|-------------------------|----|--------|--------|-----------|----|------|--------|
|                         | MS | Cons   | % Diff |           | MS | Cons | % Diff |
| 1 Kia Motors            | OW | 10.307 | 10.999 | -6.3%     |    |      |        |
| 2 Hyundai MOBIS         | OW | 35.302 | 36.537 | -3.4%     |    |      |        |
| 3 Hyundai Motor         | OW | 31.584 | 34.360 | -8.1%     |    |      |        |
| 4 Hankook Tire          | EW | 4.361  | 4.712  | -7.4%     |    |      |        |
| 5 Hella Climate Control | EW | 2.451  | 2.468  | -0.7%     |    |      |        |

Notes: Stocks ranked in order of analyst preference. All prices in local currencies. Consensus est. sourced from Thomson Reuters

Sources: Morgan Stanley Research, Thomson Reuters.

Please note that all important disclosures including personal holdings disclosures and Morgan Stanley disclosures appear on the Morgan Stanley public website at [www.morganstanley.com/researchdisclosures](http://www.morganstanley.com/researchdisclosures).

For valuation methodology and risks associated with any price targets above, please email [morganstanley.research@morganstanley.com](mailto:morganstanley.research@morganstanley.com) with a request for valuation methodology and risks on a particular stock.

## Detroit Revolution

Innovative ICE technology enables established players to keep their lead over EM players, who move toward paying for luxury cars at the high end and mass transit at the low end. Oil price grinds higher.

**The internal combustion engine, first brought to mass-produced life in Detroit, finally lives up to its true technological potential after more than 100 years of treading water.** This is a world of decent margins with a rich ecosystem of brands and values. Content and customer experience migrate the EM consumer toward some DM values. Electric vehicles are a long-term quest for prestige and differentiation, not an urgent need. Niche strategies may work.

### A narrative road map

**Consumers buy cars based on technology and are willing to pay up for innovations that suit their needs.** The industry experiences modest volume growth, with higher average revenue/unit as the result of higher content and pricing power. Higher content-adjusted pricing drives industry profitability, and industry margins comfortably exceed 10%, covering the cost of capital in most years.

**Gas prices remain in the \$4 to \$6/gallon range in the US or >\$10 in Europe for the next 5 years,** approaching \$10/gallon in the US by end of decade. New discoveries of oil

allow fuel prices to “grind up” without destroying demand, giving firms time to adapt. Half of the cars sold globally have turbo, start-stop, and hybrid or an 8-9 speed transmission and other mild hybrid technology. Vehicles get 100 mpg by the end of decade.

**Average vehicle age goes down.** Cars are replaced more frequently, contributing to a rise in replacement demand. A combination of pent-up demand and new technology drives US auto sales to 18 million units by mid-decade, yet total car parc could actually shrink. Stringent inspections drive replacement demand in the US while taking underused vehicles off the road.

**The commercialization of 4G technology in vehicles increases over the next 1-2 years,** approaching 100% of vehicles within just 5 years. Infotainment systems will be integrated into smartphones, allowing access to affordable and flexible services while driving.

**EM governments prioritize mass transit and impose restrictions on cars, including congestion pricing.** China and India accelerate spending on high-speed rail while the legislative morass hampers efforts in the US. Big global players continue to dominate the Chinese market, and western share in China drops to 50-60% by 2017 from 70% today.

Exhibit 6

### Scenario A: Detroit Revolution



#### Drivers and Outcomes

**Oil price:** Grinding higher; no shock.

**Volume and ownership:** In DM, volume up modestly, ownership density down. DM replaces the park. In EM, volume up, density up slowly.

**Leadership:** DM dominates as auto culture prevails. US high-speed rail mired in legislative impasse.

**Margins and mix:** Margins up, barbell mix: small / high quality — large / multi-function / loaded. Content-adjusted pricing.

**MPG:** 60; 100 MPG vehicles in 2020.

**Key technologies:** ICE dominates; EV a niche: limits remain on range, infrastructure, charging time.

**Tech focus:** Content, safety, entertainment, communication.

**Government:** Limited in DM: stringent inspections drive US replacement demand; US high-speed rail bogged down. Massive in EM: governments subsidize mass transit, restrict cars, charge for congestion.

**Industry structure:** Much more consolidation in supply base than in OEMs. Western share of China market still 50-60% in 5 years.

#### Evidence

- US SAAR reaches a 4-year high despite all-time high fuel prices (March 2012).
- SAAB facing potential liquidation after initial Chinese bids rejected to protect IP – shows dominance of DM club over EM.
- Average US transaction prices setting new highs (with high margins) despite high fuel prices – consumers may be getting payback for high-cost fuel-saving technology.
- Number of cars with over 40 highway MPG on offer in US up 6x in last 4 years.
- Intel creates incubation fund for in-car telematics.
- High speed rail: Political opposition in the US, expansion in emerging markets.
- Foreign OEMs still control two-thirds of the Chinese market (through JVs) despite government efforts to support local players.
- Beijing city implements car quote limit to counter traffic gridlock.

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**Scenario Surprises**

Detroit Revolution is the most consistent with our current recommendations, suggesting the current state of the world most aligned with our views. The overall median score in this scenario is the lowest (friendliest) of all others at 10.5.

**“Detroit” notwithstanding, German OEMs dominate.**

Including tire and parts supplier Continental, the Germans take 4 out of top 5 slots, reflecting more than anything a cultural prioritization of engineering excellence, a near-monopoly of the industry’s most coveted premium brands and general strong financial positions. BMW is the overall winner, ahead of VW.

**Ford and GM are both in the top 10**, but GM ranks far higher. This is intriguing given Ford’s advantages in terms of product freshness and success with efficient ICE technology (EcoBoost). Hyundai scored outside the top quintile, despite its aggressive and successful efforts to commercialize fuel-efficient technologies at a reasonable price.

**Japanese OEMs score rather low.** The Japanese OEMs account for 40% of the roughly \$1 trillion of publicly traded global auto market cap, yet Toyota is the only Japanese OEM in the top 12, ranking just below GM, and is the only Japanese company overall besides Bridgestone. The Japanese appear to suffer the most from leveling the playing field and making room for German, US, and Korean players.

**Lower-ranked players include challenged Europeans, sub-scale Japanese and unproven EM players.** PSA ranks in the bottom 12, yet Fiat, while below average, is materially higher. We ask: Where would Fiat be today if it had never bought that stake in Chrysler? And where would Renault be without Nissan? Management leadership decisions of who they align with can have powerful and lasting strategic impact.

**What are the winning attributes?**

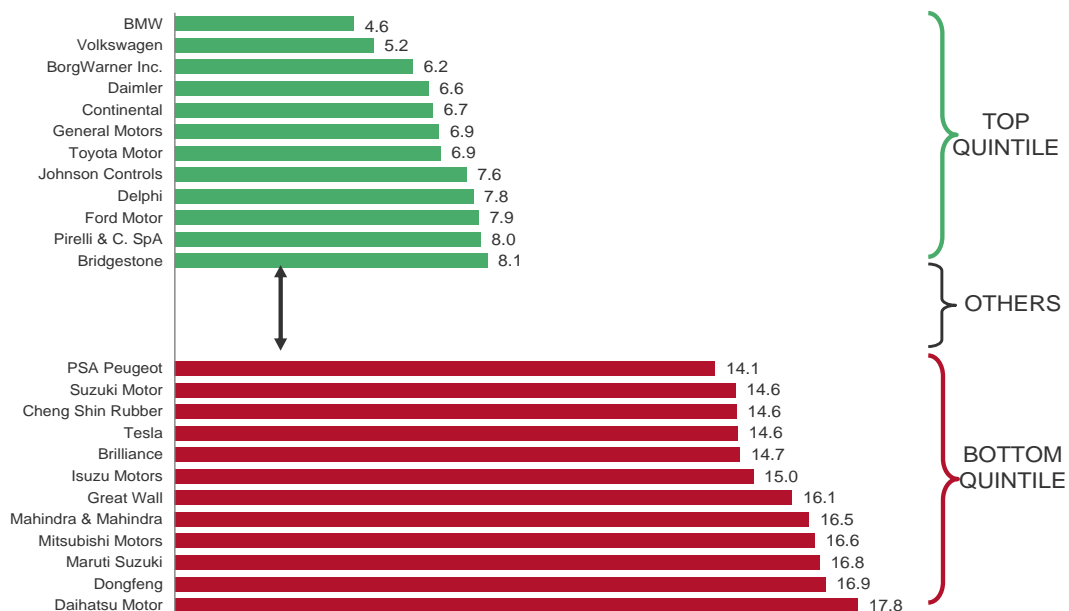
Companies that invest in advanced ICE technology and commercialize it on large scale while nurturing strong brands. They don’t try to be battery manufacturers but keep their fingers in the pie. A fortress balance sheet helps but may not be essential with outstanding cash flow accumulation. Large players who are not overly dependent on their home turf. Exposure to premium segments, either directly or indirectly.

**Implications for industry structure**

In 2022, the industry struggles to meet increased demand as consumers pay up for technology. Conditions could keep weaker players afloat, but strategic alliances and cross-shareholdings accelerate. The supply base sees much greater consolidation than the OEMs. Chinese local producers consolidate from 100 to 10-15 decent-sized players, but they fight over a minority share of the Chinese market and do not yet control a relevant portion of DM sales or production. Intellectual property remains protected.

Exhibit 7

**Detroit Revolution: Highest and lowest ranked (1 = highest, 5 = lowest) global auto companies**  
Top 12 vs. Bottom 12



Source: Company Data, Morgan Stanley Research

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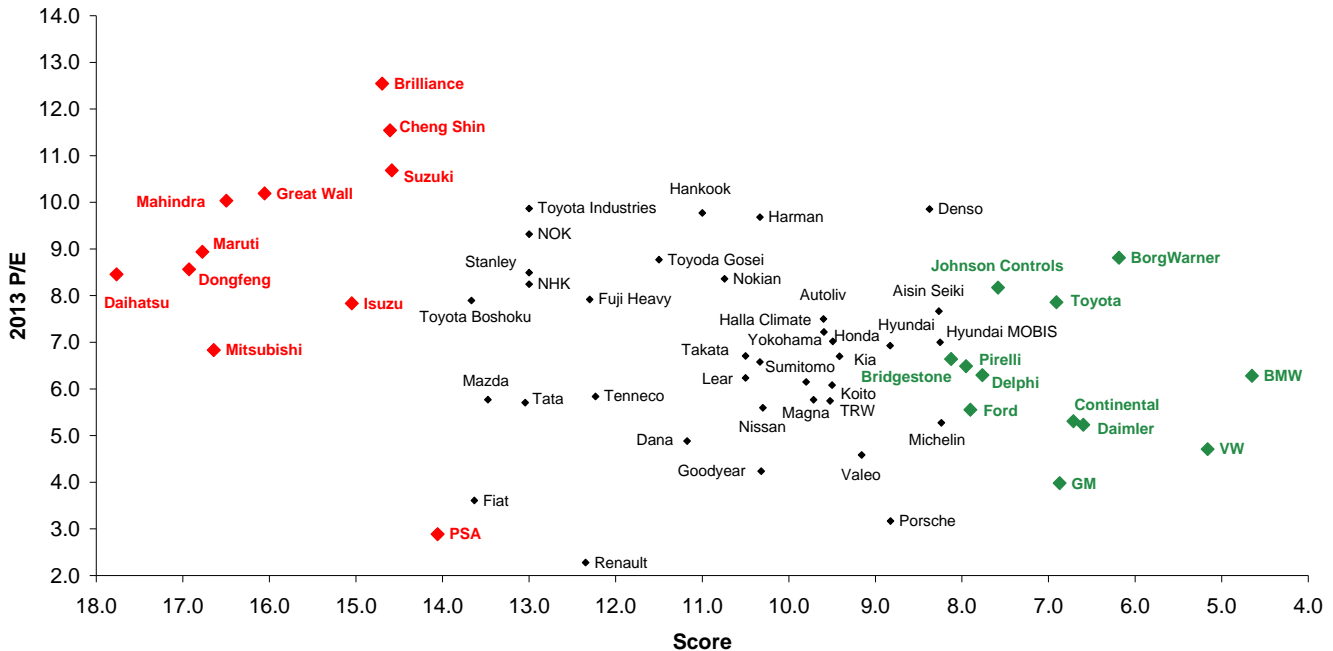
**Valuation Anomalies**

The correlation between the rankings and the valuation (forward year PE) in this scenario is very low, with an R-squared of 0.15. This produces a negatively sloping line. The better (lower) scoring names actually tend to exhibit a lower PE multiple than the worse (higher) scoring names. This suggests the market is not obviously looking at global auto stocks along the parameters of this scenario. Perhaps the market may not believe the company attributes we have defined as successful or inferior are sustainable.

The top quintile average PE multiple is 6.3x vs. the bottom quintile average of 9.0x. Amongst the top quintile ranked names, BorgWarner is the most expensive, yet with a PE of only 8.8x, while GM is the cheapest of the top bunch at only 4.0x. We note that scenario winner VW's PE of 4.7x is far below the average PE of all 60 companies of 7.1x. Within the bottom quintile, Brilliance, Cheng Shin Rubber, Suzuki and Great Wall were all in excess of 10x PE while Tesla doesn't have positive earnings on our forecasts until 2014.

- The German OEMs that rank the best are among the industry's cheaper stocks. Given the emphasis on engineering and intellectual property for internal combustion propulsion, significant upside could be realized over time in these names.
- GM appears to be as closed to a mispriced stock as any auto maker in the world under this scenario. If sentiment around GM can move beyond Opel/Vauxhall restructuring and the UST overhang, we believe a re-rating may be justified.
- BorgWarner is farthest to the upper-right of the scatter plot, suggesting its valuation at over 10x PE, while not cheap on a relative basis, would be justified given its strategic positioning.
- PSA and Fiat appear cheap for a reason, while Renault's technological and geographic attributes do not appear fully appreciated at present.

Exhibit 8  
**Detroit Revolution: Scenario rating vs. 2013e PE multiple**



Red = Lower ranking than current trading multiple, green = higher ranking  
Source: Company Data, Morgan Stanley Research

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## Electric Avenue

An oil shock destroys demand for traditional motors and spurs government support of expensive EVs, which price most consumers out of the market. New entrants gain a big share of a smaller automotive pie.

**War or a natural disaster drives oil to \$200/bbl and gas to \$6- 8/gal, making car ownership unaffordable.** This scenario features a sharp decline in individual mobility, a radical change in propulsion technology, and a plethora of new entrants. This shock to the industry becomes a tipping point for batteries. OEMs become assemblers of technology produced by others, who have a chokehold on value.

### A narrative road map

**The battery is the source of disruption.** Technology reduces profitability for the OEMs, which invest massively in EV technology and R&D. The battery owners grab what little value remains in the industry. Major technological advancements occur, but acquisition costs remain far higher than the days of internal combustion, severely limiting attainability of ownership.

**Regulation and fuel prices force OEMs to invest, which crushes margins.** DM leads a regulatory framework that

requires more-stringent standards. High purchase and operating costs reduce car ownership by 40%. IP and value added migrate to other industries. Differentiation comes from battery length plus what you can do in your car; traditional differentiation factors become secondary and consumers won't pay for them. Massive R&D investment hurts the industry; OEMs buy battery players to get the technology. Weaker players get weaker, can't invest in the arms race, and ultimately are consolidated away.

**The drop in miles driven proves destructive for tire makers.** Traditional component suppliers suffer as the car moves away from the ICE and has fewer moving parts. EV suppliers gain value. Car prices move out of the EM range, and EM car penetration slows. High fuel prices put ICE operating costs out of reach for EM OEMs, which experience overcapacity, destructive pricing, and anemic margins.

**Adoption of EV is more disruptive to traditional incumbents.** The value proposition moves from ICE plus design to EV plus design. The transition of powertrain becomes too much for many OEMs and suppliers to bear. Bankruptcies and company consolidation is a prevalent theme in this scenario.

Exhibit 9

### Scenario B: Electric Avenue



#### Drivers and Outcomes

**Oil price:** Oil price spikes to \$200 (war, natural disaster); \$6-8/ gal fuel.

**Volume and ownership:** Much lower volumes, shared ownership. Car ownership down 40%, car prices out of range for EM.

**Leadership:** DM suppliers and new entrants.

**Margins and mix:** Massive investment in EV and R&D hurts incumbents' margins. EM has overcapacity, destructive pricing, severe margin pressure.

**MPG:** Over 100.

**Key technologies:** EVs, fuel-cells. Battery viable at higher oil price.

**Tech focus:** Battery, infrastructure. Differentiation from battery power + what you can do in your car.

**Government:** High regulation. DM leads regulatory framework mandating stringent standards. Governments drive innovation in propulsion, mass transit.

**Industry structure:** EV disrupts incumbents. OEMs become assemblers of others' technology or buy battery companies. Lower miles driven destructive for tire companies & traditional component suppliers.

#### Evidence

- Gasoline prices reach \$4 per gallon in US for two consecutive years.
- Renault and Nissan launch a range of electric vehicles.
- BMW invests hundreds of millions of euros into electric car development and megacity vehicle through its 'i' venture.
- Upstart battery-maker technology breakthrough.
- Lobbying for 2025 regulation for 30 percent mileage improvement.
- All OEMs working with 3 or 4 battery makers to source batteries at lowest cost, irrespective of technology.
- Tesla IPO is first all-new US publicly listed auto company over a half century.
- Introduction of Volt by GM.
- Multiple tax rebates and incentives for EV purchases
- Big investment in high speed rail infrastructure; subways in major India metros.

Source: Morgan Stanley Research

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**Scenario Surprises**

Electric Avenue paints a fundamental re-invention of the propulsion system, placing even greater emphasis on strength of balance sheet and an ability to adapt to new technological challenges. Companies that embrace EVs as part of their long-term strategy rank best. The 11.4 overall median score is more than 1 full point higher than in Detroit Revolution.

**BMW and VW claim the two top slots again**, surprising given how much both are geared toward the ICE. The transition for both companies in scenario would not be easy. It seems our global teams ranking reflects a “if anybody can, the Germans will figure it out” view of the future. More practically, BMW and VW have the brands and balance sheet to help fund the transition to an EV-dominated landscape.

**GM stays in the top 12 thanks to its cash and the Volt.** We suspect the Volt played an important part in helping GM’s rating in this scenario in terms of demonstrating applied EV technology and the strategic priorities of company leadership.

**Japanese OEMs and suppliers score much better**, capturing 5 slots. Toyota ranks higher here, reflecting its leadership in hybrids. Nissan also makes it into the top 12 as it benefits from its aggressive EV strategy (the Leaf). Japanese suppliers NOK, Stanley Electric, and Koito make

the top 12 thanks to their core competencies in automotive seals, LED lighting and electronics.

**BorgWarner ranks below the industry average here.** Accelerating EV adoption attacks the company’s growth market of improving ICE efficiency. Tesla’s standing near the top of the industry is perhaps not as big a surprise. Hyundai falls out of the top 12 as its EV strategy is less visible.

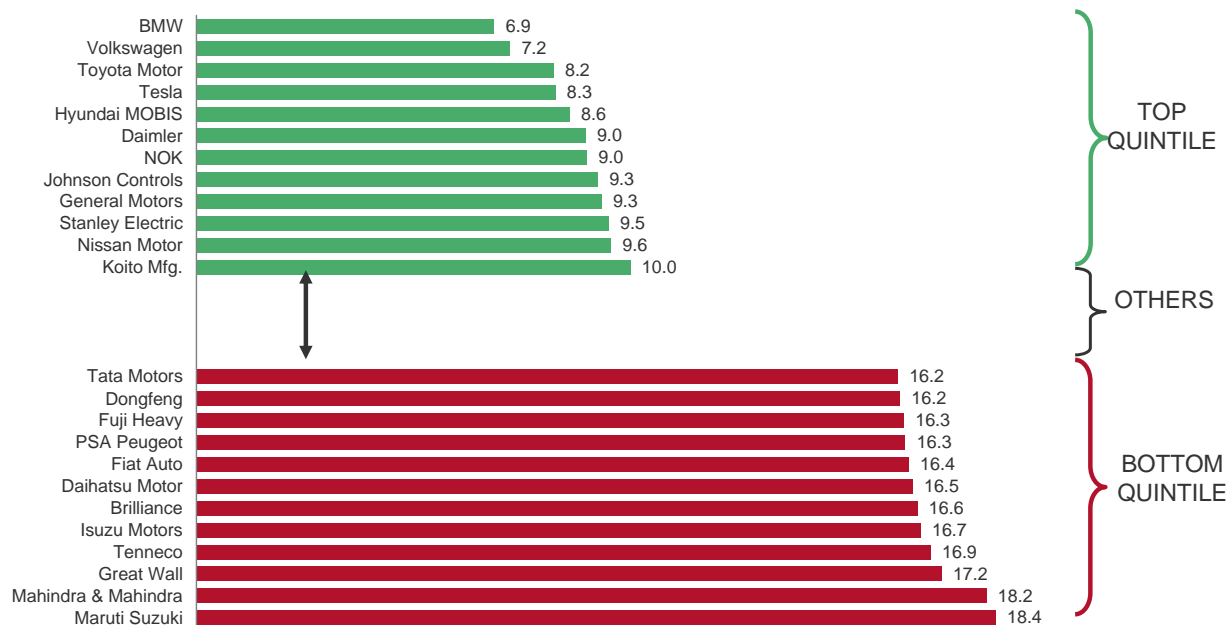
**What are the winning attributes?**

**In a near 100% EV world, battery makers or the best integrators of components and batteries prevail.** OEMs must be large with fortress balance sheets and scale. New entrants will do well: Infrastructure suppliers, mobility providers, and public transport (rail, bus, etc.). The biggest winners are likely companies not under our auto coverage.

**Implications for industry structure**

**The industry is transformed.** Weaker OEMs lacking the scale and balance sheet to invest exit the industry or are consolidated. Many technologies become redundant, driving these firms out of business. A host of new entrants spring up, including battery / fuel-cell specialists, and specialty brands (e.g. Tesla). Technology firms capture OEM territory, providing value-add content to standardized vehicles.

Exhibit 10  
**Electric Avenue: Highest and lowest ranked (1 = highest, 5 = lowest) global auto companies**  
Top 12 vs. Bottom 12



Source: Company Data, Morgan Stanley Research

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**Valuation Anomalies**

The correlation between the rankings and the valuation is closer to zero than in any other scenario, with an R-squared of 0.05, producing a slightly negatively sloping line. The rules of engagement that separate the winners from losers in this scenario appear to bear little or no relation to stock valuation. From a valuation perspective, everything's up for grabs.

The top quintile average PE multiple (ex Tesla) is 6.6x vs. the bottom quintile average of 7.7x. Once again, it appears the better positioned companies are actually cheaper than the worse positioned, on average, reflecting mean reversion as many of this group are amongst the industry's most profitable companies, due in part to high exposure to Chinese profits. Amongst the top-ranked names, following Tesla, NOK is the most expensive, yet still only just above 9x PE. Within the bottom quintile, Brilliance is the most expensive at over 12x PE. In most of the scenarios, we were surprised by the very large ratings gap between BMW and Brilliance given the extensive joint venture between the two companies in BMW's most important market (China). The bottom quintile is separated from the pack by a wide gulf.

- German OEMs occupy a 'crescent-shaped' position in the lower right hand portion of the grid, suggesting high competency at a low price. BMW's high rank is a testament to the effectiveness of its 'green' marketing.
- Tesla would have ranked even higher if its balance sheet were stronger. Perhaps some extra capital to fend off start-up risks could be useful.
- Renault stands out as perhaps the most mispriced equity under this scenario. The Street appears to be ignoring its investment in EVs through its partnership with Nissan.
- The upper right portion of the scatter forms a frontier of Toyota and key OEM suppliers that look well positioned and appear valued as such.
- Tenneco stands out as the supplier facing the greatest risk of obsolescence. Many EM players dominate the bottom quintile, as they don't demonstrate the technical prowess to make the transition.

Exhibit 11  
**Electric Avenue: Scenario rating vs. 2013e PE multiple**



Red = Lower ranking than current trading multiple, green = higher ranking  
Source: Company Data, Morgan Stanley Research

## If You Can't Beat EM, Join EM

EM economies dominate car demand, giving scale to local players. Emerging market OEMs acquire developed market brands and technology; they transplant production to DMs. Oil price grinds higher.

Many OEMs today think this is where the world is headed. Over the next 3-5 years, technology continues to improve with greater fuel efficiency and tighter emission norms. An EM presence is more important as governments demand local presence in manufacturing and R&D. More fuel-efficient small cars come to market, creating significant pricing pressure and driving down the cost curve. Luxury affordability in EM creates demand.

### A narrative road map

**The Tata Nano launches in the US**, changing perceptions of the brand, and Tata opens a North American plant. EM tastes start influencing global design and styling. Newly minted EM millionaires desire prestige and luxury brands. The abnormally high profits earned up front enable the premium players to remain relevant in an age of frugality.

### Government subsidies and influence drive EM

**ascendancy**, as EMs execute their technology roadmaps for lighter, more fuel-efficient cars. DM OEMs adopt frugal manufacturing approaches to stay competitive. Benign regulatory regimes in EMs foster growth, and the macroeconomic environment remains supportive.

**Tata Motors' relentless price reductions create a new segment** in which other EM OEMs compete successfully, achieving scale by 2020. Competition spawns differentiation and EM OEMs thereby avoid the risk of homogeneity.

**The global market evolves into a barbell** with luxury and small cars. Global alliances proliferate as EM becomes more important. With scale economies at both ends of the barbell, market share becomes critical.

**EM players come to DM markets while DM players adapt to EM tastes and preferences.** More aggressive 'champions' from India and China vie to become the next Hyundai, taking significant market share in the US and Europe. DM players with first mover advantages in China hold onto significant global share, but sacrifice on average transaction price.

Exhibit 12

### Scenario C: If You Can't Beat EM, Join EM



#### Drivers and Outcomes

**Oil price:** Grinding higher; no shock.

**Volume and ownership:** EM demand for individual mobility spirals. Volume higher, ownership much higher.

**Leadership:** Companies with large EM footprint. More players will adopt low cost manufacturing approaches of EM.

**Margins and mix:** Low margins and barbell (fuel efficient and large, luxury).

**MPG:** Over 50.

**Key technologies:** Frugal engineering.

**Tech focus:** Fuel-efficient smaller cars.

**Government:** Limited regulation EM governments push local presence in manufacturing and R&D. Massive government subsidies and influence tilt auto design and styling toward EM.

**Industry structure:** More global alliances.

Market share game as pricing pressures increase.

#### Evidence

- Tata Nano and Bajaj RE 60 examples of frugal manufacturing.
- Global alliances forming: Nissan, Bajaj, and Renault.
- Number of players in A2 has doubled from 6 to 12 in last 2 years.
- Exports of small cars rose from 5% to 15% of mix in last 5 years.
- Korean imports into EU jump >50% on initial implementation of free trade agreement.
- DM players open dedicated design centers in EM.
- Multiple DM OEMs (VW, GM. Now Ford examining it) launching indigenous Chinese brands into the market.
- OEMs launch cars catering to EM market (Ford in Delhi).
- Geely buys Volvo; Tata, Jaguar and Land Rover.
- Mahindra bidding on SAA.

Source: Morgan Stanley Research

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**Scenario Surprises**

Can't Beat EM, Join EM features a diverse geographic mix of players in the top and bottom rankings. Among OEMs, the leading quintile includes two from Germany, two from China, and one each from the US, South Korea, Japan, and India. The overall median score in this scenario of 11.3 is only slightly below the Electric Avenue scenario.

**VW ranks the best by far** thanks to its strong position in China and Brazil, platform scale, and demonstrated willingness to adapt design and content to local EM tastes.

**Korean names dominate the top quintile**, grabbing 4 of the top 12 slots. Hyundai MOBIS, Hankook Tire, and Halla Climate appear well-positioned in terms of geography, cost, and customer exposure.

**The gap between GM and Ford is wider here than in any other scenario** (GM ranks fifth and Ford forty-second)- It's difficult for Ford to consider itself a truly global player while having only a 2% share of the world's largest car market. We believe Ford has gotten the message.

**Toyota and Nissan not so high.** Many might be surprised to see Toyota ranked so low and Nissan ranking out of the top quintile given both companies' efforts in penetrating key

emerging markets like China. Improved execution on product and share in China could go a long way to improve this.

**2 Chinese OEMs (Dongfeng and Great Wall) make the top 12, but just barely.** Tata Motors ranks well higher, at third, reflecting significant premium exposure and having a large footprint in both the fast-growing Chinese and underdeveloped Indian markets.

**What are the winning attributes?**

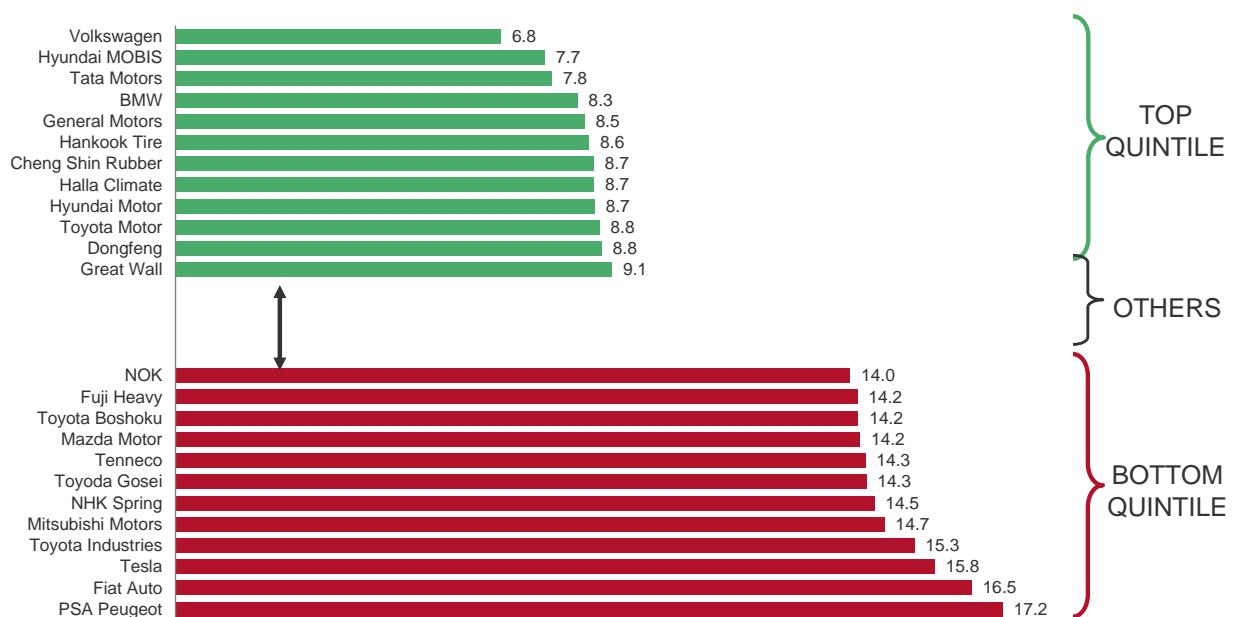
**Successful companies will be masters of frugal engineering** with a strong EM footprint, augmented by a luxury presence. Winners must be relevant in both EM and DM with no room to hide in the home region anymore. Winners will be OEMs with the best chance of emerging as the new 'national champions' from EM (Tata, Dongfeng, Great Wall) as well as DM players with strong and sustainable positions in EM that have embraced these markets.

**Implications for industry structure**

**Platform scale and geographic reach could drive strategic activity.** This scenario is one of small, technologically advanced, high-quality cars produced in very high volume and sold at very reasonable price points. These parameters should exert great pressure on OEMs to spread high development costs over as much volume as possible.

Exhibit 13

**If You Can't Beat EM, Join EM: Highest and lowest ranked (1 = highest, 5 = lowest) global auto companies Top 12 vs. Bottom 12**



Source: Company Data, Morgan Stanley Research

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**Valuation Anomalies**

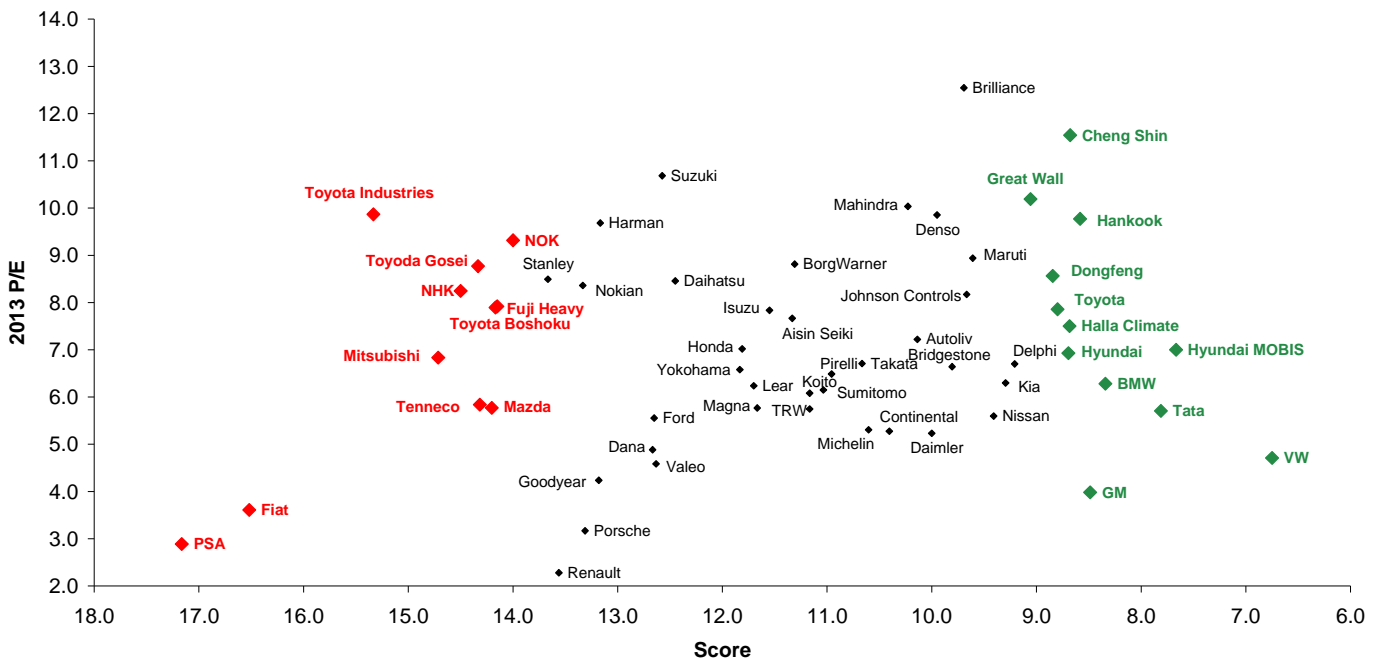
While the correlation is extremely low (R-squared = 0.03), the scenario produces close to a horizontal regression line. While there are many pieces of evidence showing the industry’s movement toward a Can’t Beat EM, Join EM scenario, its influence on current valuation is not at all clear to the naked eye.

The top quintile average PE multiple of 7.5x is modestly higher than that of the bottom quintile, at just under 7x. The bottom quintile companies form a loosely linear relationship, in which the lowest scoring players trade at the lowest multiple with the best of the bottom quintile trading at richer multiples. On the other hand, the top quintile shows a roughly horizontal pattern, with a rather tight ratings cluster (excluding outlier VW) but trading at multiples ranging from 4x to 11.5x PE.

- **GM and VW occupy positions in the bottom-right of the scatter plot** as strongly positioned companies trading at low multiples.
- **Within the bottom quintile, PSA and Fiat rank as both poorly positioned and cheaply valued.** It’s telling that PSA and Fiat are today manufacturers of some of the most frugal, fuel-efficient cars on the planet, yet score at the very bottom on positioning, weighed down by their weak financial positions and brands. It seems both are seen as most vulnerable to a ‘crowding-out’ by the new EM players on the block.
- **Delphi, Kia, Nissan, Daimler, and Continental all trade at rather low PE multiples** relative to how highly they ranked within this scenario – only just outside of the top quintile. Each has significant EM exposure or competitive footprints in low-cost countries that we think can prove successful here.

Exhibit 14

**If You Can’t Beat EM, Join EM: Scenario rating vs. 2013e PE multiple**



Red = Lower ranking than current trading multiple, green = higher ranking  
Source: Company Data, Morgan Stanley Research

## Walmart on Wheels

Low oil prices and frugal engineering drive commoditization of cars, making technology less relevant. EM players export to DM and dominate their local EM markets, too.

**This is the worst case scenario for the auto industry, in our view.** EM dominance (in terms of growth and global share) drives rapid car penetration, but the value of the automobile is “de-rated” as smaller and cheaper cars predominate. As in the China white goods industry, no one will pay a premium for cars. Mix remains anchored at the low end, and industry profitability moves steadily downward. The oil price stays low.

### A narrative road map

**Domestic EM market share grows from 30% to ~50%.** Defining a local brand is hard because the DM OEMs themselves have local brands, but DM ownership of intellectual property goes to 40-50%. China is still not a big exporter. Public transportation becomes increasingly important because it is efficient. The wealthy spend on high-end cars, while government subsidies support mass ownership at the low end.

**Urban congestion and pollution drive government intervention to slow down the pace of auto ownership.** Infrastructure development of roads and sophisticated traffic management systems enable EM ownership levels to grow rapidly. Demand for inexpensive transportation creates an engineering challenge with vehicle safety, spawning rapid penetration of active safety technology (accident avoidance)

**DM OEMs put more technology into a shrinking footprint.** Global competition intensifies, but the Chinese market remains fragmented except at the high end and offers better margins than other markets, helped by cheaper manufacturing costs. The government may provide a catalyst by mandating size and other requirements.

**Intellectual property is not well protected.** Domestic Chinese players gradually marginalize their foreign partners. Their assistance is no longer required.

**Low-cost producers with scale make money.** Technology is not a differentiating factor, putting DM OEMs at a clear disadvantage. EM outgrows DM and is the only area that can deliver growth. The middle class exists but focuses on entry-level cars. Without a wealthy demographic to support them, independent luxury manufacturers cannot survive. Independent high-end players face the greatest pressures.

Exhibit 15

### Scenario D: Walmart on Wheels



#### Drivers and Outcomes

**Oil price:** Stays low

**Volume and ownership:** World is flooded with smaller, cheaper cars, which are commoditized like white goods. Volume higher, ownership higher

**Leadership:** Large EM low-cost OEMs, new entrants, and battery manufacturers

**Margins and mix:** Low for OEMs, high for battery manufacturers; mix is diverse

**MPG:** Low end 50; high end over 100

**Key technologies:** EV on high end, ICE low cost

**Tech focus:** Low-cost manufacturing and battery

**Government:** Subsidizes cars for masses, regulates safety mix; may impose size requirements

**Industry structure:** Need for scale to produce cheaper cars drives alliances. DM powerhouses become niche boutique brands. More M&A in components than OEMs.

#### Evidence

- Tata motors Nano and Bajaj RE 60 examples of frugal manufacturing
- China is largest and fastest growing auto market in the world
- China penetration is still low (1950s for US, 1970s for Japan, 1980 for Korea)
- Government encouraging R&D for new energy cars and providing subsidies; moving down the curve
- More local and hybrid OEM brands trying to be cost leaders
- More players and models with Chinese brands
- Investment in new energy cars
- China invests \$15B to support EV vehicles and targets
- Chinese brands gain significant share in Brazil in 2 years with vehicles far cheaper than prevailing prices.

Source: Morgan Stanley Research

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**Scenario Surprises**

This is perhaps the most unusual, but no less plausible, scenario of them all. Imagine a world where developed markets are locked in a pattern of austerity and slow growth while new discoveries of raw materials lead to low enough energy prices to allow the emerging market growth to continue self-sustainably. Fuel economy takes a back seat to basic and reliable transportation and the lowest price possible. With technology de-prioritized, the conventional company rankings are thrown into disarray. This is truly a dark era for the global auto industry. The overall median score in this scenario is 12.7, by far the highest (most unfriendly) outcome of all four scenarios.

**EM OEMs capture 3 of top 5 and 6 of top 12 slots.** Great Wall is the overall winner, over Hankook Tire and Tata Motors.

**VW, Hyundai/Kia and Toyota were the best-positioned OEMs.** VW is the only truly western-domiciled OEM in the top 12. No other German or US player made the cut.

**GM continues to rank well above Ford.** While it ranked just outside the top quintile, GM once again ranked well above Ford mainly due to its financial and geographic footprint.

**Renault once again higher than PSA, as in all scenarios,** demonstrating the value of the Nissan alliance in providing improved scale and emerging market presence.

**Tesla ranks last** as the combination of low fuel prices and de-contented vehicles plays against its high-tech, advanced propulsion business model. The bottom quintile includes high tech suppliers (Harman, BorgWarner, suppliers with EV exposure) and OEMs with weak balance sheet. Daimler also found its way into the bottom quintile; this is the only scenario in which a German OEM ranked in the bottom quintile.

**What are the winning attributes?**

Being the low cost producer with a flexible and adaptable product strategy is key. Brands and technology matter less. Companies need to be low-cost leaders at the low end.

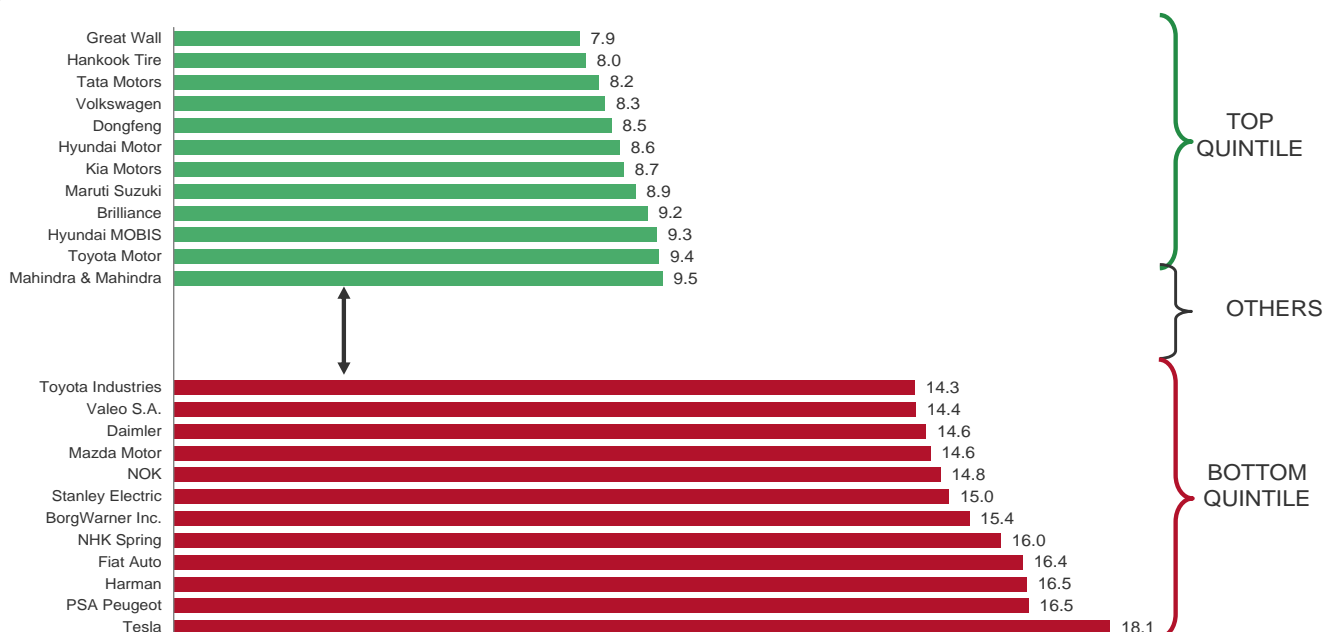
**Implications for industry structure**

**To produce the cheapest cars, scale matters more than ever.** Unlike the other scenarios, alliances and friendly mergers may not be how the industry consolidates. Walmart on Wheels may be a test of survival of the fittest. EM OEMs become major industry powers, while DM powerhouses weaken and become niche, boutique brands, assuming they survive at all. We may see more M&A on the component side than amongst OEMs.

Exhibit 16

**Walmart on Wheels: Highest and lowest ranked global auto companies**

Top 12 vs. Bottom 12



Source: Company Data, Morgan Stanley Research

June 5, 2012  
Global Auto Scenarios 2022

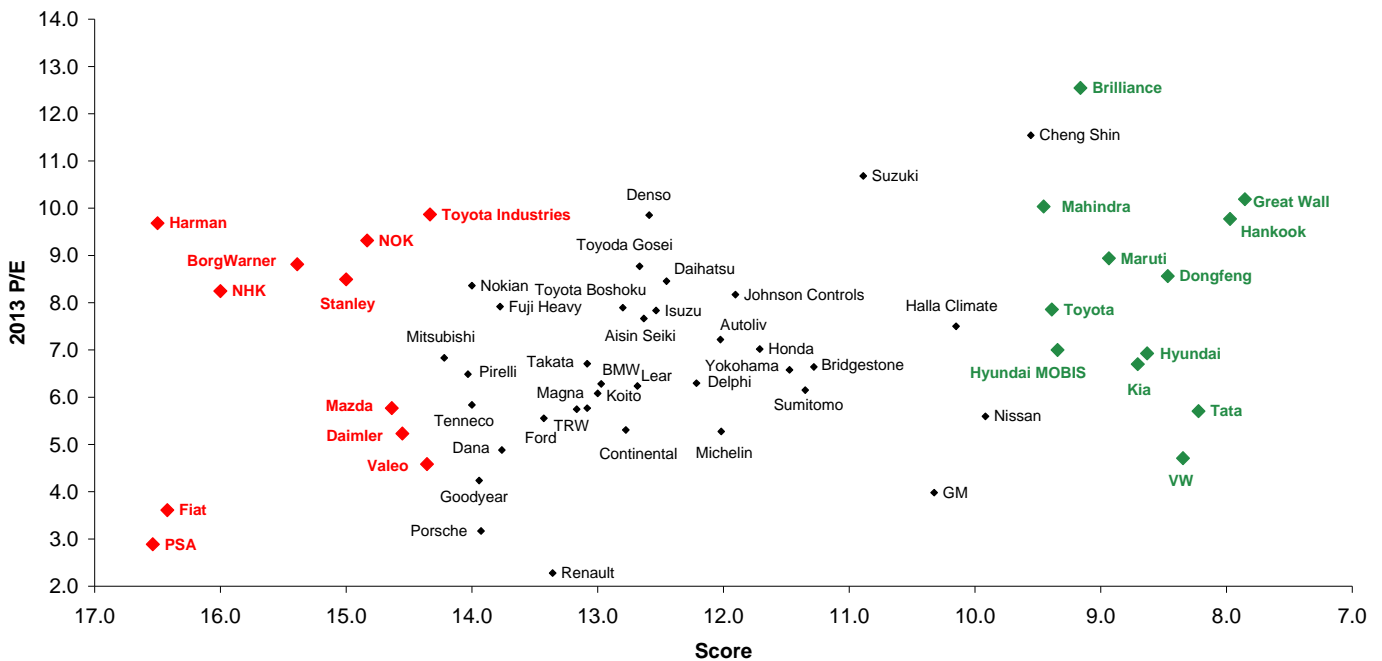
**Valuation Anomalies**

While the correlation is very low (R-squared = 0.09), this scenario actually produces the most positively sloping line. Nevertheless, it would be premature for us to concede this scenario is the most likely predicted by forward year valuation.

The top quintile average PE multiple is 8.2x vs. the bottom quintile average of 7.0x. The better-positioned companies trade at a meaningful premium (1.2x PE) to the lower ranked companies. Amongst the top quintile-ranked names, VW is clearly the cheapest at 4.7x PE, while Brilliance is clearly the most expensive at over 12x. Within the bottom quintile, Harman and BorgWarner are the most expensive names (although both <10x), while Fiat and PSA are by far the cheapest.

- Scenario winner and runner-up Great Wall and Hankook are priced at roughly three turns of PE multiple above the average of all 60 global auto stocks in our analysis.
- The scenario's 3<sup>rd</sup> and 4<sup>th</sup> ranked players Tata Motors and VW are priced at 1.4 to 2.4 turns of PE multiple below the global auto sector average. Dongfeng may not be as highly ranked as Great Wall, but for under 9x PE, it may be worth the price if one believed this view of the world were to play out.
- Harman and BorgWarner stand out as the two stocks most vulnerable to this scenario judging by their relatively higher valuations set against their low ranking.

Exhibit 17  
**Walmart on Wheels: Scenario rating vs. 2013e PE multiple**



Red = Lower ranking than current trading multiple, green = higher ranking  
Source: Company Data, Morgan Stanley Research

## The Debates on Our Axes

**Our discussion of the changes facing the industry came down to two areas: technology and markets.** We chose these as the axes for our quadrant analysis because they encompass multiple debates.

### Vertical Axis: Technology

**The overarching question is whether technology increases demand and improves the value proposition of vehicle ownership, driving top-line growth.** Or does technology impair the value proposition and shift demand to alternative mobility? Our discussions explored three key areas:

- **Energy Efficiency.** Do advanced internal combustion engines, advanced materials, and battery technology drive affordable solutions and stimulate demand? Or does technology increase the cost of vehicles, putting them out of reach for the masses and stunting demand?
- **Connectivity.** Can technology manage congestion and save time, money, and lives? Will the car become a seamlessly connected domain of the Internet? Or does IT turn the car into a commoditized ‘pod’?
- **Alternatives to driving.** Mass transit (high-speed rail, self-driving mega-city vehicles) can compete with autos for both long-distance travel and the last mile driven. Breakthroughs in alternatives may challenge traditional vehicle demand.

**An oil price shock could drive major changes in regulatory response, technology deployment, and auto industry structure.** Battery manufacturers, infrastructure providers, and mobility solutions may extract value from the industry. The more the debate hinges on new propulsion technologies, the more radical the outcomes. Our current definition of the “car industry” could become obsolete. On the other hand, a gradual rise in energy prices would allow existing players to adapt and add value through content and differentiation. Value-added may remain within the industry.

### Horizontal Axis: Market Pacesetter

**Will emerging or developed, mature markets set the pace in the auto industry over the next 10 years?** Key questions we addressed:

- **Influence on demand.** Are emerging markets merely an opportunity to target the incremental consumer? Or will their share of global demand mirror their population?
- **Impact on supply.** Does EM remain a source of cheap supply for export, or will EM companies transplant aggressively to mature markets to target DM consumers?
- **Product mix and content.** How would an EM-dominated world differ in terms of product/segment mix, brand values, and applied technology?
- **Regulation.** How much will EM governments intervene? Will regulation support individual mobility or tilt the playing field toward mass transit and alternatives?

**“Frugal Innovation” may rise in an EM-dominated world.** We explored several avenues for this trend: compromises in car content at a much lower price point, different manufacturing techniques, or designs that target Asia’s emerging middle class. In a premium-driven DM-dominated world, intellectual property stays in companies that pursue engineering excellence and brand differentiation.

## Our Scenario Process

**We mapped the future of the industry over the next 10 years through a series of steps.** To start the process of developing scenarios, we asked each of the 18 members of the global auto team in North America, Europe, China, Japan, Korea, India, and Taiwan to answer this question:

*What is the biggest change the auto industry will face over the next 10 years – and what should companies do today to prepare for that change?*

We also asked the team to list the critical forces, uncertainties and drivers of change over the coming decade. After collating the results, the global team held three roundtable discussions over the course of several days, led by facilitators from outside the group.

**The pasta was flying.** This brainstorming process was like throwing dozens of plates of spaghetti at the wall and seeing what stuck. The team identified nearly 60 forces of industry change that we grouped into four clusters:

- Demand (including demographics, consumer preferences and economics)
- Macroeconomic factors and markets
- Technology and manufacturing (including supply chain and industry economics)
- Government and regulations

**We winnowed the forces down to nine key factors:**

1. Energy prices
2. Energy efficiency
3. Impact of the Internet
4. Future of the combustion engine
5. Technology solutions for mobility/infrastructure
6. Imbalances in demand for mobility (emerging v. developed markets; urbanization)
7. Polarization of brands and products
8. Less demand for driving due to digitization
9. Impact of financing on car ownership

**We distilled a second key question** from these influences and trends to shape our ten-year views:

*What will demand for road mobility look like, and what technology and infrastructure can enable it?*

To develop plausible scenarios, we defined these uncertainties as two axes with polar outcomes: *Technology adds or reduces value* in the automobile and by extension, the industry; and either *emerging or developed markets set the pace* for demand over the next ten years

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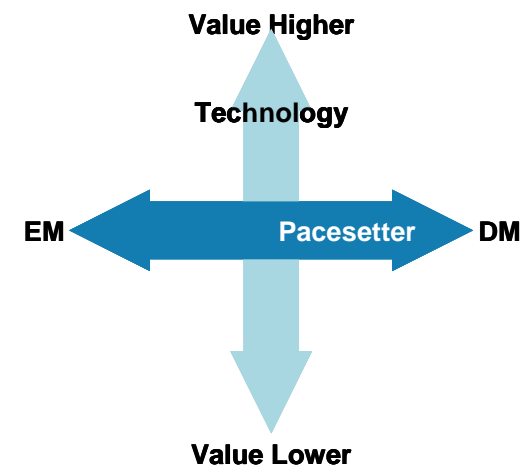
Exhibit 18  
**From Brainstorming to Quadrants: Steps in Our Process**

|                                       |  |   |
|---------------------------------------|--|---|
| <b>Demand</b>                         | <p><b>Demographics</b><br/>Car evolution from luxury to daily necessity<br/>Rise of the eco-boomer<br/><b>Urbanization v. suburbanization</b><br/>EM demographics tilting toward younger demand<br/>Population growth/control<br/>Impact of aging DM population</p>  | <p><b>Consumer preferences and economics</b><br/>Consumer preferences for fuel economy<br/>Changing taste in status symbols<br/>Ownership changes – rent v. buy<br/>Cost of ownership v. leasing<br/>Preference for smaller cars<br/><b>Driving patterns – less driving due to digitization</b><br/>EM consumer price sensitivity driving prices down</p> |
| <b>Macro &amp; Markets</b>            | <p><b>Macro factors</b><br/><b>Energy prices – peak oil</b><br/><b>Internet</b><br/>Macroeconomic cycles<br/>Pollution<br/>Impact to oil companies of alternative energy<br/><b>Credit availability</b><br/><b>Financial conditions – interest rates in particular</b></p>   | <p><b>Market shifts</b><br/>EM competition<br/><b>EM v. DM growth</b><br/>Physical infrastructure in EM<br/>Rise of China and India<br/>Secular decline in DM<br/>Protectionism<br/>Higher barriers to globalization<br/>China as a source of exports (assembly in Tennessee)</p>   |
| <b>Technology &amp; Manufacturing</b> | <p><b>Technology</b><br/>Technological innovations<br/><b>Fuel technology innovations – energy efficiency</b><br/>Increased tire durability, better fuel efficiency<br/>Kinetic energy / materials science progress<br/>More electronics in automobiles<br/>Connectivity within cars<br/>Smart cars<br/>Security features – safety<br/>Customization<br/>Safety of new vehicles and infrastructure</p> | <p><b>Supply chain and industry economics</b><br/>Cars becoming cheaper<br/><b>Frugal innovation – low-cost cars from EM</b><br/>Lower-cost engine technology<br/>Lower-cost batteries<br/>Capacity increases<br/>Density of car parks<br/><b>Product mix change</b><br/>Industry consolidation</p>   |
| <b>Government &amp; Regulations</b>   | <p><b>Regulations and policy</b><br/>Political interest in shaping change<br/>Government subsidies<br/>Increased regulation<br/><b>Fuel efficiency and mandates throughout EM</b><br/>Emission standards upgrade<br/>Implementation of emission standards<br/>Taxation change<br/>Dynamic pricing of cars, tolls, parking space<br/>Corporate protection of intellectual property</p>                  |   |

- Nine key factors**
1. Energy prices
  2. Energy efficiency
  3. Impact of Internet
  4. Future of combustion engine
  5. Technology solutions for mobility/infrastructure
  6. Imbalances in demand for mobility (EM v. DM, urbanization)
  7. Polarization of brands and products
  8. Less demand for driving due to digitization
  9. Financings' impact on car ownership

**Key question:**

**What will the demand for road mobility look like, and what technology and infrastructure can enable it?**



Source: Morgan Stanley Research

June 5, 2012  
Global Auto Scenarios 2022

Exhibit 19

## Morgan Stanley Global Coverage – OEMs

| Company                        | Currency | Price at 4-Jun | MS Price Target | Upside to PT (%) | MS Rating | Market Cap |       | MS EPS |        | Consensus EPS |        | Dividend Yield | P / E       |             | EV / EBITDA <sup>(3)</sup> |             | EV / Sales <sup>(3)</sup> |            | P / B       |             |  |
|--------------------------------|----------|----------------|-----------------|------------------|-----------|------------|-------|--------|--------|---------------|--------|----------------|-------------|-------------|----------------------------|-------------|---------------------------|------------|-------------|-------------|--|
|                                |          |                |                 |                  |           | LC         | US\$  | 2012e  | 2013e  | 2012e         | 2013e  |                | 2012e       | 2013e       | 2012e                      | 2013e       | 2012e                     | 2013e      | 2012e       | 2013e       |  |
| <b>Europe<sup>(1)</sup></b>    |          |                |                 |                  |           |            |       |        |        |               |        |                |             |             |                            |             |                           |            |             |             |  |
| Volkswagen                     | EUR      | 119.75         | 200.00          | 67%              | OW        | 54.1       | 66.9  | 22.05  | 25.43  | 21.20         | 23.46  | 2.6%           | 5.4x        | 4.7x        | 1.9x                       | 1.5x        | 23%                       | 19%        | 0.8x        | 0.7x        |  |
| Daimler                        | EUR      | 34.85          | 51.00           | 46%              | EW        | 37.2       | 45.9  | 5.29   | 6.66   | 5.34          | 6.05   | 6.3%           | 6.6x        | 5.2x        | 2.0x                       | 1.8x        | 24%                       | 23%        | 0.9x        | 0.8x        |  |
| BMW                            | EUR      | 56.85          | 85.00           | 50%              | OW        | 34.2       | 42.3  | 8.37   | 9.05   | 8.08          | 8.37   | 4.0%           | 6.8x        | 6.3x        | 2.0x                       | 1.9x        | 33%                       | 30%        | 1.2x        | 1.1x        |  |
| Renault                        | EUR      | 32.88          | 60.00           | 82%              | OW        | 9.7        | 12.0  | 9.82   | 14.43  | 7.41          | 10.09  | 3.5%           | 3.3x        | 2.3x        | NM                         | NM          | NM                        | NM         | 0.4x        | 0.3x        |  |
| Fiat Auto                      | EUR      | 3.73           | 3.80            | 2%               | UW        | 4.7        | 5.8   | 0.50   | 1.03   | 0.69          | 1.01   | 1.9%           | 7.4x        | 3.6x        | 2.2x                       | 1.8x        | 18%                       | 15%        | 0.4x        | 0.4x        |  |
| PSA Peugeot                    | EUR      | 7.85           | 14.00           | 78%              | OW        | 2.8        | 3.4   | 1.15   | 2.72   | 0.73          | 2.25   | 7.7%           | 6.8x        | 2.9x        | 1.3x                       | 1.1x        | 9%                        | 8%         | 0.2x        | 0.2x        |  |
| Europe Weighted Average        |          |                |                 |                  |           |            |       |        |        |               |        | 4.0%           | 6.0x        | 5.0x        | 2.0x                       | 1.7x        | 25%                       | 23%        | 0.9x        | 0.8x        |  |
| <b>North America</b>           |          |                |                 |                  |           |            |       |        |        |               |        |                |             |             |                            |             |                           |            |             |             |  |
| Ford Motor                     | USD      | 10.04          | 18.00           | 79%              | OW        | 37.6       | 37.6  | 1.52   | 1.81   | 1.49          | 1.73   | 2.0%           | 6.6x        | 5.6x        | 3.0x                       | 2.2x        | 27%                       | 22%        | 2.0x        | 1.5x        |  |
| General Motors                 | USD      | 21.11          | 45.00           | 113%             | OW        | 33.1       | 33.1  | 3.80   | 5.30   | 3.49          | 4.58   | NA             | 5.6x        | 4.0x        | 2.4x                       | 1.5x        | 21%                       | 15%        | 1.0x        | 0.8x        |  |
| North America Weighted Average |          |                |                 |                  |           |            |       |        |        |               |        | 2.0%           | 6.1x        | 4.8x        | 2.7x                       | 1.9x        | 25%                       | 18%        | 1.5x        | 1.2x        |  |
| <b>Japan</b>                   |          |                |                 |                  |           |            |       |        |        |               |        |                |             |             |                            |             |                           |            |             |             |  |
| Toyota Motor                   | JPY      | 2,926          | 4,260           | 46%              | OW        | 10,088.8   | 129.1 | 286.8  | 372.4  | 283.2         | 337.1  | 1.7%           | 10.2x       | 7.9x        | 4.8x                       | 4.0x        | 44%                       | 42%        | 0.8x        | 0.8x        |  |
| Honda Motor                    | JPY      | 2,417          | 3,050           | 26%              | UW        | 4,378.2    | 56.0  | 309.0  | 344.3  | 293.8         | 342.2  | 2.5%           | 7.8x        | 7.0x        | 4.1x                       | 3.7x        | 32%                       | 30%        | 0.9x        | 0.8x        |  |
| Nissan Motor                   | JPY      | 723            | 1,220           | 69%              | OW        | 3,268.5    | 41.8  | 107.0  | 129.2  | 101.5         | 121.5  | 2.8%           | 6.8x        | 5.6x        | 2.3x                       | 1.8x        | 21%                       | 18%        | 0.9x        | 0.8x        |  |
| Suzuki Motor                   | JPY      | 1,579          | 2,400           | 52%              | OW        | 885.9      | 11.3  | 136.7  | 147.8  | 138.3         | 152.4  | 1.0%           | 11.5x       | 10.7x       | 2.4x                       | 2.0x        | 24%                       | 20%        | 0.9x        | 0.9x        |  |
| Isuzu Motors                   | JPY      | 388            | 575             | 48%              | OW        | 658.4      | 8.4   | 44.0   | 49.5   | 48.1          | 52.1   | 1.6%           | 8.8x        | 7.8x        | 3.8x                       | 3.2x        | 39%                       | 34%        | 1.4x        | 1.2x        |  |
| Daihatsu Motor                 | JPY      | 1,271          | 1,750           | 38%              | UW        | 542.9      | 6.9   | 160.8  | 150.3  | 158.7         | 166.5  | 3.6%           | 7.9x        | 8.5x        | 2.6x                       | 2.6x        | 29%                       | 28%        | 1.2x        | 1.1x        |  |
| Fuji Heavy                     | JPY      | 573            | 850             | 48%              | OW        | 448.6      | 5.7   | 63.1   | 72.4   | 66.0          | 76.3   | 1.6%           | 9.1x        | 7.9x        | 3.9x                       | 3.4x        | 29%                       | 26%        | 0.9x        | 0.9x        |  |
| Mitsubishi Motors              | JPY      | 75             | 60              | (20%)            | UW        | 415.3      | 5.3   | 6.2    | 11.0   | 5.5           | 8.5    | NA             | 12.1x       | 6.8x        | 3.1x                       | 2.5x        | 24%                       | 21%        | 2.6x        | 2.2x        |  |
| Hino Motors                    | JPY      | 493            | 685             | 39%              | EW        | 283.3      | 3.6   | 78.3   | 102.2  | 54.6          | 66.9   | 1.6%           | 6.3x        | 4.8x        | 4.3x                       | 3.3x        | 29%                       | 26%        | 1.2x        | 1.0x        |  |
| Mazda Motor                    | JPY      | 94             | 165             | 76%              | OW        | 281.9      | 3.6   | 8.6    | 16.3   | 4.1           | 11.7   | 1.6%           | 10.9x       | 5.8x        | 4.7x                       | 3.7x        | 25%                       | 24%        | 0.6x        | 0.5x        |  |
| Yamaha Motor                   | JPY      | 722            | 1,200           | 66%              | OW        | 252.5      | 3.2   | 94.1   | 109.1  | 101.2         | 125.7  | 2.2%           | 7.7x        | 6.6x        | 3.9x                       | 3.1x        | 27%                       | 25%        | 0.8x        | 0.7x        |  |
| Japan Weighted Average         |          |                |                 |                  |           |            |       |        |        |               |        | 2.1%           | 9.1x        | 7.4x        | 4.0x                       | 3.4x        | 35%                       | 33%        | 0.9x        | 0.8x        |  |
| <b>China</b>                   |          |                |                 |                  |           |            |       |        |        |               |        |                |             |             |                            |             |                           |            |             |             |  |
| Dongfeng                       | HKD      | 12.96          | 15.60           | 20%              | EW        | 37.0       | 4.8   | 1.36   | 1.51   | 1.32          | 1.47   | 1.7%           | 9.5x        | 8.6x        | 3.0x                       | 2.4x        | 41%                       | 35%        | 1.6x        | 1.3x        |  |
| Brilliance                     | HKD      | 7.06           | 6.40            | (9%)             | UW        | 35.5       | 4.6   | 0.47   | 0.56   | 0.47          | 0.60   | NA             | 15.1x       | 12.5x       | 10.4x                      | 8.9x        | 437%                      | 437%       | 2.7x        | 2.2x        |  |
| Great Wall                     | HKD      | 15.66          | 15.80           | 1%               | OW        | 16.2       | 2.1   | 1.37   | 1.54   | 1.42          | 1.55   | 2.4%           | 11.4x       | 10.2x       | 4.3x                       | 3.5x        | 73%                       | 59%        | 2.0x        | 1.7x        |  |
| Sinotruk                       | HKD      | 4.10           | 3.80            | (7%)             | UW        | 11.3       | 1.5   | 0.33   | 0.36   | 0.40          | 0.45   | 2.3%           | 12.5x       | 11.3x       | 5.3x                       | 4.8x        | 46%                       | 43%        | 0.5x        | 0.5x        |  |
| China Weighted Average         |          |                |                 |                  |           |            |       |        |        |               |        | 1.9%           | 12.0x       | 10.4x       | 5.7x                       | 4.8x        | 171%                      | 165%       | 1.9x        | 1.6x        |  |
| <b>Korea</b>                   |          |                |                 |                  |           |            |       |        |        |               |        |                |             |             |                            |             |                           |            |             |             |  |
| Hyundai Motor                  | KRW      | 233,500        | 329,000         | 41%              | OW        | 51,435     | 43.7  | 31,584 | 33,706 | 34,626        | 37,457 | 0.7%           | 7.4x        | 6.9x        | 3.6x                       | 3.3x        | 49%                       | 44%        | 1.4x        | 1.2x        |  |
| Kia Motors                     | KRW      | 76,900         | 105,000         | 37%              | OW        | 31,172     | 26.5  | 10,307 | 11,478 | 11,002        | 12,039 | 0.8%           | 7.5x        | 6.7x        | 6.9x                       | 6.2x        | 75%                       | 70%        | 1.8x        | 1.4x        |  |
| Korea Weighted Average         |          |                |                 |                  |           |            |       |        |        |               |        | 0.8%           | 7.4x        | 6.8x        | 4.9x                       | 4.4x        | 59%                       | 54%        | 1.6x        | 1.3x        |  |
| <b>India<sup>(2)</sup></b>     |          |                |                 |                  |           |            |       |        |        |               |        |                |             |             |                            |             |                           |            |             |             |  |
| Tata Motors                    | INR      | 221.5          | 291.0           | 31%              | EW        | 599.9      | 10.7  | 34.34  | 38.83  | 40.38         | 45.60  | 1.7%           | 6.5x        | 5.7x        | 3.4x                       | 3.1x        | 44%                       | 41%        | 1.7x        | 1.4x        |  |
| Bajaj Auto                     | INR      | 1,493.0        | 1,823.0         | 22%              | OW        | 432.0      | 7.7   | 119.1  | 134.0  | 119.0         | 135.5  | 3.0%           | 12.5x       | 11.1x       | 8.7x                       | 7.3x        | 163%                      | 133%       | 5.6x        | 4.4x        |  |
| Mahindra & Mahindra            | INR      | 654.7          | 728.0           | 11%              | EW        | 402.0      | 7.2   | 43.0   | 49.0   | 57.1          | 64.7   | 1.9%           | 15.2x       | 13.4x       | 9.5x                       | 7.8x        | 115%                      | 96%        | 2.7x        | 2.2x        |  |
| Hero MotoCorp                  | INR      | 1,865.7        | 1,590.0         | (15%)            | UW        | 372.6      | 6.7   | 132.4  | 135.5  | 137.7         | 149.2  | 5.7%           | 14.1x       | 13.8x       | 10.0x                      | 8.4x        | 119%                      | 99%        | 6.5x        | 5.2x        |  |
| Maruti Suzuki                  | INR      | 1,075.1        | 1,599.0         | 49%              | OW        | 310.6      | 5.6   | 100.5  | 120.3  | 86.6          | 105.4  | 0.7%           | 10.7x       | 8.9x        | 5.1x                       | 3.8x        | 50%                       | 38%        | 1.8x        | 1.5x        |  |
| Ashok Leyland                  | INR      | 25.3           | 22.5            | (11%)            | UW        | 67.2       | 1.2   | 2.9    | 3.2    | 2.6           | 3.2    | 4.0%           | 8.7x        | 7.9x        | 6.0x                       | 5.3x        | 64%                       | 59%        | 1.5x        | 1.3x        |  |
| TVS Motor                      | INR      | 32.5           | 38.0            | 17%              | EW        | 15.5       | 0.3   | 4.2    | 4.8    | 4.9           | 5.9    | 4.0%           | 7.7x        | 6.8x        | 5.1x                       | 4.3x        | 30%                       | 25%        | 1.2x        | 1.0x        |  |
| India Weighted Average         |          |                |                 |                  |           |            |       |        |        |               |        | 2.6%           | 11.2x       | 10.1x       | 7.0x                       | 5.9x        | 94%                       | 79%        | 3.4x        | 2.8x        |  |
| <b>Global Weighted Average</b> |          |                |                 |                  |           |            |       |        |        |               |        | <b>2.5%</b>    | <b>7.9x</b> | <b>6.6x</b> | <b>3.7x</b>                | <b>3.1x</b> | <b>41%</b>                | <b>37%</b> | <b>1.2x</b> | <b>1.0x</b> |  |

Source: Morgan Stanley Research, Thomson Reuters E = Morgan Stanley Research estimates

O = Overweight; E = Equal-Weight; U = Underweight; NR = Not Rated; ++ = Restricted.

(1) For Renault EV calculation, Nissan and Volvo stakes are subtracted at 20% discount to their current market cap

(2) For Indian companies, 2010 and 2011 estimates refer to the fiscal years ending March 2011 and March 2012, respectively

(3) EV/EBITDA excludes the impacts from pension and healthcare liabilities with the exception of Ford and GM. Ford and GM are calculated using EV/EBITDAP and do include pension and healthcare liabilities.

Please note that all important disclosures including personal holdings disclosures and Morgan Stanley disclosures appear on the Morgan Stanley public website at [www.morganstanley.com/researchdisclosures](http://www.morganstanley.com/researchdisclosures).For valuation methodology and risks associated with any price targets above, please email [morganstanley.research@morganstanley.com](mailto:morganstanley.research@morganstanley.com) with a request for valuation methodology and risks on a particular stock.

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Exhibit 20  
**Morgan Stanley Global Coverage – Suppliers**

| Company                             | Currency | Price at 4-Jun | MS Price Target | Upside to PT (%) | MS Rating | Market Cap |      | MS EPS |        | Consensus EPS |        | Dividend Yield | P / E       |             | EV / EBITDA |             | EV / Sales |            | P / B       |             |  |
|-------------------------------------|----------|----------------|-----------------|------------------|-----------|------------|------|--------|--------|---------------|--------|----------------|-------------|-------------|-------------|-------------|------------|------------|-------------|-------------|--|
|                                     |          |                |                 |                  |           | LC         | US\$ | 2012e  | 2013e  | 2012e         | 2013e  |                | 2012e       | 2013e       | 2012e       | 2013e       | 2012e      | 2013e      | 2012e       | 2013e       |  |
| <b>Europe</b>                       |          |                |                 |                  |           |            |      |        |        |               |        |                |             |             |             |             |            |            |             |             |  |
| Continental                         | EUR      | 62.14          | 92.00           | 48%              | OW        | 12.4       | 15.4 | 10.00  | 11.85  | 9.30          | 10.38  | 2.4%           | 6.2x        | 5.2x        | 3.6x        | 3.2x        | 57%        | 50%        | 1.5x        | 1.3x        |  |
| Autoliv                             | USD      | 54.93          | 68.00           | 24%              | UW        | 4.9        | 4.9  | 6.90   | 7.61   | 6.31          | 6.88   | 3.4%           | 8.0x        | 7.2x        | 3.8x        | 3.4x        | 53%        | 48%        | 1.4x        | 1.2x        |  |
| GKN                                 | GBP      | 175.50         | NC              | NA               | NC        | 2.7        | 4.2  | NA     | NA     | 25.59         | 28.01  | 3.3%           | 6.9x        | 6.3x        | 4.9x        | 4.5x        | 57%        | 53%        | 1.7x        | 1.7x        |  |
| Valeo S.A.                          | EUR      | 33.06          | 46.00           | 39%              | OW        | 2.6        | 3.2  | 6.10   | 7.11   | 5.62          | 6.34   | 4.3%           | 5.4x        | 4.7x        | 2.3x        | 1.9x        | 25%        | 21%        | 1.1x        | 0.9x        |  |
| Faurecia                            | EUR      | 12.91          | NC              | NA               | NC        | 1.4        | 1.8  | NA     | NA     | 2.91          | 3.57   | 2.8%           | 4.4x        | 3.6x        | 2.5x        | 2.2x        | 17%        | 16%        | 1.0x        | 1.0x        |  |
| Brembo                              | EUR      | 8.34           | NC              | NA               | NC        | 0.6        | 0.7  | NA     | NA     | 0.79          | 0.98   | 3.6%           | 10.5x       | 8.5x        | 5.5x        | 4.9x        | 68%        | 62%        | 1.5x        | 1.5x        |  |
| Europe Weighted Average             |          |                |                 |                  |           |            |      |        |        |               |        | 2.9%           | 6.5x        | 5.6x        | 3.7x        | 3.3x        | 51%        | 46%        | 1.4x        | 1.3x        |  |
| <b>North America <sup>(1)</sup></b> |          |                |                 |                  |           |            |      |        |        |               |        |                |             |             |             |             |            |            |             |             |  |
| Johnson Controls                    | USD      | 28.60          | 44.00           | 54%              | OW        | 19.5       | 19.5 | 2.75   | 3.50   | 2.72          | 3.33   | 2.5%           | 10.4x       | 8.2x        | 7.0x        | 5.3x        | 59%        | 52%        | 1.6x        | 1.3x        |  |
| Delphi                              | USD      | 27.73          | 36.00           | 30%              | OW        | 9.1        | 9.1  | 3.85   | 4.40   | 3.79          | 4.24   | NA             | 7.2x        | 6.3x        | 4.4x        | 3.3x        | 59%        | 47%        | 3.0x        | 2.0x        |  |
| Magna International                 | USD      | 37.49          | 55.00           | 47%              | OW        | 8.8        | 8.8  | 5.20   | 6.50   | 4.94          | 5.58   | 2.9%           | 7.2x        | 5.8x        | 3.6x        | 2.7x        | 26%        | 23%        | 1.0x        | 0.9x        |  |
| BorgWarner Inc.                     | USD      | 64.78          | 100.00          | 54%              | OW        | 7.4        | 7.4  | 5.70   | 7.35   | 5.53          | 6.60   | NA             | 11.4x       | 8.8x        | 6.6x        | 4.8x        | 104%       | 82%        | 2.5x        | 1.9x        |  |
| TRW Automotive                      | USD      | 36.22          | 65.00           | 79%              | OW        | 4.4        | 4.4  | 6.15   | 6.30   | 5.93          | 6.68   | NA             | 5.9x        | 5.7x        | 3.0x        | 2.3x        | 30%        | 23%        | 1.2x        | 0.9x        |  |
| Lear                                | USD      | 37.41          | 55.00           | 47%              | OW        | 3.7        | 3.7  | 5.45   | 6.00   | 5.30          | 5.71   | 1.5%           | 6.9x        | 6.2x        | 2.7x        | 2.1x        | 20%        | 16%        | 1.3x        | 1.1x        |  |
| Harman                              | USD      | 38.29          | 40.00           | 4%               | UW        | 2.7        | 2.7  | 2.95   | 3.95   | 2.94          | 3.88   | 0.8%           | 13.0x       | 9.7x        | 4.8x        | 3.7x        | 48%        | 40%        | 1.6x        | 1.4x        |  |
| Dana                                | USD      | 12.19          | 20.00           | 64%              | OW        | 1.8        | 1.8  | 2.05   | 2.50   | 1.94          | 2.33   | 1.6%           | 6.0x        | 4.9x        | 3.4x        | 2.5x        | 36%        | 29%        | 1.9x        | 1.4x        |  |
| Tenneco                             | USD      | 24.79          | 32.00           | 29%              | UW        | 1.5        | 1.5  | 3.25   | 4.25   | 3.30          | 4.25   | NA             | 7.6x        | 5.8x        | 3.7x        | 2.9x        | 32%        | 25%        | 6.4x        | 2.9x        |  |
| American Axle                       | USD      | 8.36           | 12.00           | 44%              | UW        | 0.6        | 0.6  | 2.00   | 2.30   | 1.95          | 2.34   | NA             | 4.2x        | 3.6x        | 4.8x        | 4.0x        | 73%        | 57%        | NM          | NM          |  |
| Meritor                             | USD      | 4.95           | 8.00            | 62%              | OW        | 0.5        | 0.5  | 1.25   | 1.55   | 1.23          | 1.62   | NA             | 4.0x        | 3.2x        | 5.4x        | 4.7x        | 43%        | 37%        | NM          | NM          |  |
| North America Weighted Average      |          |                |                 |                  |           |            |      |        |        |               |        | 2.3%           | 8.8x        | 7.1x        | 5.2x        | 3.9x        | 53%        | 44%        | 1.9x        | 1.5x        |  |
| <b>Japan</b>                        |          |                |                 |                  |           |            |      |        |        |               |        |                |             |             |             |             |            |            |             |             |  |
| Denso                               | JPY      | 2,311          | 2,750           | 19%              | EW        | 2,043      | 26.2 | 211    | 235    | 208           | 239    | 2.0%           | 11.0x       | 9.9x        | 3.3x        | 2.9x        | 41%        | 37%        | 0.9x        | 0.8x        |  |
| Aisin Seiki                         | JPY      | 2,367          | 3,000           | 27%              | EW        | 697        | 8.9  | 273    | 309    | 281           | 312    | 2.2%           | 8.7x        | 7.7x        | 3.2x        | 3.0x        | 40%        | 39%        | 0.8x        | 0.8x        |  |
| Toyota Industries                   | JPY      | 2,027          | 2,750           | 36%              | EW        | 660        | 8.5  | 189    | 205    | 193           | 214    | 2.5%           | 10.7x       | 9.9x        | 4.7x        | 4.1x        | 49%        | 43%        | 0.6x        | 0.5x        |  |
| NOK                                 | JPY      | 1,547          | 1,650           | 7%               | EW        | 268        | 3.4  | 150    | 166    | 165           | 176    | 1.0%           | 10.3x       | 9.3x        | 3.8x        | 3.4x        | 54%        | 48%        | 1.0x        | 0.9x        |  |
| NHK Spring                          | JPY      | 810            | 900             | 11%              | EW        | 198        | 2.5  | 82     | 98     | 98            | 113    | 1.9%           | 9.9x        | 8.2x        | 3.6x        | 3.0x        | 40%        | 35%        | 1.1x        | 1.0x        |  |
| Toyoda Gosei                        | JPY      | 1,491          | 1,650           | 11%              | EW        | 194        | 2.5  | 143    | 170    | 134           | 151    | 2.5%           | 10.4x       | 8.8x        | 2.2x        | 1.9x        | 31%        | 27%        | 0.8x        | 0.8x        |  |
| Stanley Electric                    | JPY      | 1,070          | 1,250           | 17%              | EW        | 192        | 2.5  | 108    | 126    | 125           | 139    | 2.5%           | 9.9x        | 8.5x        | 2.5x        | 2.2x        | 52%        | 45%        | 0.8x        | 0.8x        |  |
| Kalro Mfg.                          | JPY      | 999            | 1,400           | 40%              | OW        | 161        | 2.1  | 141    | 164    | 142           | 161    | 2.0%           | 7.1x        | 6.1x        | 2.4x        | 1.9x        | 30%        | 25%        | 0.9x        | 0.8x        |  |
| Toyota Boshoku                      | JPY      | 818            | 900             | 10%              | UW        | 154        | 2.0  | 86     | 104    | 86            | 100    | 2.0%           | 9.5x        | 7.9x        | 2.6x        | 2.3x        | 17%        | 16%        | 0.9x        | 0.8x        |  |
| Takata                              | JPY      | 1,565          | 2,000           | 28%              | EW        | 130        | 1.7  | 200    | 233    | 213           | 243    | 1.8%           | 7.8x        | 6.7x        | 2.3x        | 1.9x        | 26%        | 22%        | 0.8x        | 0.7x        |  |
| Calsonic Kansai                     | JPY      | 430            | 650             | 51%              | OW        | 117        | 1.5  | 59     | 79     | 61            | 68     | 1.8%           | 7.2x        | 5.4x        | 2.5x        | 1.9x        | 16%        | 13%        | 0.9x        | 0.8x        |  |
| Keihin                              | JPY      | 1,122          | 1,350           | 20%              | UW        | 83         | 1.1  | 135    | 139    | 161           | 173    | 2.4%           | 8.3x        | 8.1x        | 1.7x        | 1.4x        | 20%        | 17%        | 0.7x        | 0.6x        |  |
| EXEDY                               | JPY      | 1,556          | 2,500           | 61%              | EW        | 76         | 1.0  | 251    | 277    | 241           | 256    | 3.3%           | 6.2x        | 5.6x        | 1.8x        | 1.6x        | 29%        | 25%        | 0.6x        | 0.5x        |  |
| Japan Weighted Average              |          |                |                 |                  |           |            |      |        |        |               |        | 2.1%           | 10.0x       | 8.9x        | 3.3x        | 2.9x        | 40%        | 36%        | 0.8x        | 0.8x        |  |
| <b>China <sup>(2)</sup></b>         |          |                |                 |                  |           |            |      |        |        |               |        |                |             |             |             |             |            |            |             |             |  |
| Mint Group Limited                  | HKD      | 8.56           | 12.50           | 46%              | OW        | 9.2        | 1.2  | 0.84   | 0.99   | 0.82          | 0.93   | 3.1%           | 10.2x       | 8.7x        | 4.5x        | 3.7x        | 96%        | 75%        | 1.1x        | 1.0x        |  |
| China Zenix                         | USD      | 2.96           | 7.40            | (61%)            | OW        | 0.2        | 0.2  | 9.96   | 11.35  | 9.91          | 11.29  | 2.0%           | 1.9x        | 1.7x        | 1.4x        | 0.7x        | 27%        | 14%        | 0.4x        | 0.3x        |  |
| Changfeng Axle                      | HKD      | 0.62           | 6.00            | 868%             | OW        | 0.5        | 0.1  | 0.53   | 0.64   | 0.53          | 0.64   | NA             | 1.2x        | 1.0x        | 0.6x        | 0.6x        | 16%        | 15%        | 0.2x        | 0.2x        |  |
| China Weighted Average              |          |                |                 |                  |           |            |      |        |        |               |        | 3.1%           | 10.2x       | 8.7x        | 4.5x        | 3.7x        | 96%        | 75%        | 1.1x        | 1.0x        |  |
| <b>Korea</b>                        |          |                |                 |                  |           |            |      |        |        |               |        |                |             |             |             |             |            |            |             |             |  |
| Hyundai MOBIS                       | KRW      | 271,000        | 392,000         | 45%              | OW        | 26,380     | 22.3 | 35,302 | 38,717 | 36,522        | 40,409 | 0.7%           | 7.7x        | 7.0x        | 7.8x        | 7.0x        | 89%        | 81%        | 1.5x        | 1.3x        |  |
| Hyundai WIA                         | KRW      | 162,000        | NC              | NA               | NC        | 4,168      | 3.5  | NA     | NA     | 14,687        | 17,345 | 0.3%           | 11.0x       | 9.3x        | 8.4x        | 7.0x        | 71%        | 63%        | NA          | NA          |  |
| Mando Corp                          | KRW      | 156,500        | NC              | NA               | NC        | 2,850      | 2.4  | NA     | NA     | 15,175        | 18,492 | 0.8%           | 10.3x       | 8.5x        | 6.2x        | 5.2x        | 63%        | 54%        | NA          | NA          |  |
| Halla Climate Control               | KRW      | 19,300         | 23,600          | 22%              | EW        | 2,060      | 1.7  | 2,451  | 2,573  | 2,477         | 2,872  | 3.5%           | 7.9x        | 7.5x        | 6.0x        | 5.5x        | 92%        | 88%        | 1.4x        | 1.3x        |  |
| Korea Weighted Average              |          |                |                 |                  |           |            |      |        |        |               |        | 0.8%           | 8.3x        | 7.4x        | 7.6x        | 6.8x        | 85%        | 77%        | 1.5x        | 1.3x        |  |
| <b>India</b>                        |          |                |                 |                  |           |            |      |        |        |               |        |                |             |             |             |             |            |            |             |             |  |
| Exide Industries                    | INR      | 124.15         | 129.00          | 4%               | EW        | 105.5      | 1.9  | 8.05   | 9.45   | 7.82          | 8.90   | 1.3%           | 15.4x       | 13.1x       | 9.8x        | 7.4x        | 158%       | 120%       | 2.8x        | 2.4x        |  |
| India Weighted Average              |          |                |                 |                  |           |            |      |        |        |               |        | 1.3%           | 15.4x       | 13.1x       | 9.8x        | 7.4x        | 158%       | 120%       | 2.8x        | 2.4x        |  |
| <b>Global Weighted Average</b>      |          |                |                 |                  |           |            |      |        |        |               |        | <b>2.1%</b>    | <b>8.8x</b> | <b>7.6x</b> | <b>4.7x</b> | <b>4.0x</b> | <b>55%</b> | <b>48%</b> | <b>1.4x</b> | <b>1.2x</b> |  |

Source: Morgan Stanley Research, Thomson Reuters E = Morgan Stanley Research estimates

O = Overweight; E = Equal-Weight; U = Underweight; NR = Not Rated; ++ = Restricted.

(1) EV/EBITDA excludes the impacts from pension and healthcare liabilities with the exception of our North American coverage, which are calculated using EV/EBITDAP and do include pension and healthcare liabilities.

(2) China Zenix stock price in USD, everything else in Chinese Yuan.

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For valuation methodology and risks associated with any price targets above, please email [morganstanley.research@morganstanley.com](mailto:morganstanley.research@morganstanley.com) with a request for valuation methodology and risks on a particular stock.

June 5, 2012  
Global Auto Scenarios 2022

Exhibit 21  
**Morgan Stanley Global Coverage – Tires**

| Company                             | Currency | Price at 4-Jun | MS Price Target | Upside to PT (%) | MS Rating | Market Cap |      | MS EPS |       | Consensus EPS |       | Dividend Yield | P / E |       | EV / EBITDA |       | EV / Sales |       | P / B |       |  |
|-------------------------------------|----------|----------------|-----------------|------------------|-----------|------------|------|--------|-------|---------------|-------|----------------|-------|-------|-------------|-------|------------|-------|-------|-------|--|
|                                     |          |                |                 |                  |           | LC         | US\$ | 2012e  | 2013e | 2012e         | 2013e |                | 2012e | 2013e | 2012e       | 2013e | 2012e      | 2013e | 2012e | 2013e |  |
| <b>Europe</b>                       |          |                |                 |                  |           |            |      |        |       |               |       |                |       |       |             |       |            |       |       |       |  |
| Continental                         | EUR      | 62.89          | 92.00           | 46%              | OW        | 12.6       | 15.6 | 10.00  | 11.85 | 9.30          | 10.38 | 2.4%           | 6.3x  | 5.3x  | 3.6x        | 3.2x  | 57%        | 50%   | 1.5x  | 1.3x  |  |
| Michelin                            | EUR      | 46.28          | 55.00           | 19%              | UW        | 8.3        | 10.3 | 7.68   | 8.77  | 7.69          | 8.24  | 4.5%           | 6.0x  | 5.3x  | 3.2x        | 2.9x  | 47%        | 43%   | 0.9x  | 0.8x  |  |
| Nokian Tyres                        | EUR      | 27.67          | 34.00           | 23%              | EW        | 3.6        | 4.5  | 2.97   | 3.31  | 2.99          | 3.31  | 4.3%           | 9.3x  | 8.4x  | 6.6x        | 5.8x  | 226%       | 200%  | 2.6x  | 2.3x  |  |
| Pirelli & C. SpA                    | EUR      | 7.56           | 12.00           | 59%              | OW        | 3.6        | 4.4  | 1.00   | 1.17  | 0.95          | 1.13  | 3.6%           | 7.6x  | 6.5x  | 4.1x        | 3.4x  | 73%        | 65%   | 1.4x  | 1.3x  |  |
| Europe Weighted Average             |          |                |                 |                  |           |            |      |        |       |               |       | 3.4%           | 6.8x  | 5.8x  | 4.0x        | 3.5x  | 78%        | 69%   | 1.5x  | 1.3x  |  |
| <b>North America <sup>(1)</sup></b> |          |                |                 |                  |           |            |      |        |       |               |       |                |       |       |             |       |            |       |       |       |  |
| Goodyear                            | USD      | 9.44           | 14.00           | 48%              | UW        | 2.3        | 2.3  | 2.05   | 2.23  | 1.96          | 2.44  | NA             | 4.6x  | 4.2x  | 4.3x        | 3.9x  | 41%        | 37%   | 3.0x  | 1.7x  |  |
| Cooper                              | USD      | 13.85          | 22.00           | 59%              | OW        | 0.9        | 0.9  | 2.32   | 3.44  | 2.06          | 2.45  | 3.0%           | 6.0x  | 4.0x  | 4.1x        | 3.1x  | 41%        | 36%   | 1.2x  | 0.9x  |  |
| North America Weighted Average      |          |                |                 |                  |           |            |      |        |       |               |       | 3.0%           | 5.0x  | 4.2x  | 4.3x        | 3.7x  | 41%        | 37%   | 2.5x  | 1.5x  |  |
| <b>Japan</b>                        |          |                |                 |                  |           |            |      |        |       |               |       |                |       |       |             |       |            |       |       |       |  |
| Bridgestone                         | JPY      | 1,663          | 2,450           | 47%              | OW        | 1,352      | 17.3 | 222    | 250   | 217           | 233   | 1.4%           | 7.5x  | 6.6x  | 4.0x        | 3.5x  | 55%        | 51%   | 1.0x  | 0.9x  |  |
| Sumitomo Rubber                     | JPY      | 926            | 1,250           | 35%              | EW        | 244        | 3.1  | 125    | 151   | 131           | 140   | 2.5%           | 7.4x  | 6.1x  | 5.3x        | 4.8x  | 73%        | 68%   | 1.1x  | 0.9x  |  |
| Yokohama Rubber                     | JPY      | 522            | NC              | NA               | NC        | 179        | 2.3  | NA     | NA    | 77            | 79    | 2.0%           | 6.8x  | 6.6x  | 4.6x        | 4.3x  | 55%        | 53%   | 0.9x  | 0.9x  |  |
| Japan Weighted Average              |          |                |                 |                  |           |            |      |        |       |               |       | 1.6%           | 7.4x  | 6.6x  | 4.2x        | 3.8x  | 58%        | 53%   | 1.0x  | 0.9x  |  |
| <b>Korea</b>                        |          |                |                 |                  |           |            |      |        |       |               |       |                |       |       |             |       |            |       |       |       |  |
| Hankook Tire                        | KRW      | 45,500         | 46,200          | 2%               | EW        | 6,925      | 5.9  | 4,361  | 4,656 | 4,712         | 5,090 | 0.9%           | 10.4x | 9.8x  | 6.7x        | 6.4x  | 120%       | 108%  | 1.7x  | 1.5x  |  |
| Nexen Tire                          | KRW      | 21,500         | NC              | NA               | NC        | 2,041      | 1.7  | NA     | NA    | 1,559         | 1,927 | 0.3%           | 13.8x | 11.2x | 10.4x       | 8.6x  | 161%       | 138%  | 3.0x  | 3.0x  |  |
| Kumho Tire                          | KRW      | 13,900         | NC              | NA               | NC        | 1,579      | 1.3  | NA     | NA    | 1,279         | 1,703 | NA             | 10.9x | 8.2x  | 7.1x        | 6.3x  | 95%        | 90%   | 2.5x  | 2.5x  |  |
| Korea Weighted Average              |          |                |                 |                  |           |            |      |        |       |               |       | 0.7%           | 11.1x | 9.8x  | 7.5x        | 6.8x  | 124%       | 111%  | 2.1x  | 1.9x  |  |
| <b>Taiwan</b>                       |          |                |                 |                  |           |            |      |        |       |               |       |                |       |       |             |       |            |       |       |       |  |
| Cheng Shin Rubber                   | TWD      | 71.50          | 65.00           | (9%)             | EW        | 176.8      | 5.9  | 5.20   | 6.19  | 5.05          | 5.73  | 2.4%           | 13.8x | 11.5x | 8.7x        | 7.6x  | 155%       | 135%  | 2.8x  | 2.4x  |  |
| Kenda                               | TWD      | 33.50          | NC              | NA               | NC        | 23.1       | 0.8  | NA     | NA    | 2.81          | NA    | 3.0%           | 11.9x | N/A   | 6.4x        | NA    | 73%        | NA    | 1.6x  | 1.6x  |  |
| Taiwan Weighted Average             |          |                |                 |                  |           |            |      |        |       |               |       | 2.5%           | 13.5x | 11.5x | 8.5x        | 7.6x  | 146%       | 135%  | 2.7x  | 2.3x  |  |
| <b>Global Weighted Average</b>      |          |                |                 |                  |           |            |      |        |       |               |       | 2.5%           | 8.0x  | 6.9x  | 4.8x        | 4.3x  | 82%        | 73%   | 1.6x  | 1.3x  |  |

Source: Morgan Stanley Research, Thomson Reuters E = Morgan Stanley Research estimates  
O = Overweight; E = Equal-Weight; U = Underweight; NR = Not Rated; ++ = Restricted.

(1) EV/EBITDA excludes the impacts from pension and healthcare liabilities with the exception of GT and CTB, which are calculated using EV/EBITDAP and do include pension and healthcare liabilities.

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June 5, 2012  
Global Auto Scenarios 2022

Exhibit 22

### Morgan Stanley Global Coverage – Dealers

| Company                               | Currency | Price at 4-Jun | MS Price Target | Upside to PT (%) | MS Rating | Market Cap |      | MS EPS |       | Consensus EPS |       | Dividend Yield | P / E |       | EV / EBITDA |       | EV / Sales |       | P / B |       |  |
|---------------------------------------|----------|----------------|-----------------|------------------|-----------|------------|------|--------|-------|---------------|-------|----------------|-------|-------|-------------|-------|------------|-------|-------|-------|--|
|                                       |          |                |                 |                  |           | LC         | US\$ | 2012e  | 2013e | 2012e         | 2013e |                | 2012e | 2013e | 2012e       | 2013e | 2012e      | 2013e | 2012e | 2013e |  |
| <b>North America</b>                  |          |                |                 |                  |           |            |      |        |       |               |       |                |       |       |             |       |            |       |       |       |  |
| CarMax                                | USD      | 27.38          | NC              | NA               | NC        | 6.2        | 6.2  | NA     | NA    | 1.79          | 1.94  | NA             | 15.3x | 14.1x | 15.0x       | 13.0x | 111%       | 101%  | 2.0x  | 2.0x  |  |
| AutoNation                            | USD      | 35.32          | 32.00           | (9%)             | UW        | 4.3        | 4.3  | 2.30   | 2.54  | 2.33          | 2.62  | NA             | 15.4x | 13.9x | 9.9x        | 8.8x  | 43%        | 39%   | 2.7x  | 2.3x  |  |
| Penske Automotive Group               | USD      | 23.12          | 27.00           | 17%              | OW        | 2.1        | 2.1  | 2.26   | 2.41  | 2.16          | 2.39  | 1.9%           | 10.2x | 9.6x  | 7.4x        | 6.5x  | 23%        | 20%   | 1.6x  | 1.3x  |  |
| Group 1 Automotive                    | USD      | 48.26          | 40.00           | (17%)            | UW        | 1.1        | 1.1  | 4.19   | 4.32  | 4.48          | 4.99  | 1.2%           | 11.5x | 11.2x | 6.9x        | 6.5x  | 22%        | 21%   | 1.3x  | 1.1x  |  |
| Sonic Automotive                      | USD      | 14.14          | NC              | NA               | NC        | 0.6        | 0.6  | NA     | NA    | 1.66          | 1.87  | 0.7%           | 8.5x  | 7.6x  | 7.9x        | 7.2x  | 26%        | 25%   | 1.2x  | 1.2x  |  |
| Lithia Motors                         | USD      | 22.17          | NC              | NA               | NC        | 0.5        | 0.5  | NA     | NA    | 2.49          | 2.75  | 1.8%           | 8.9x  | 8.1x  | 8.7x        | 8.0x  | 41%        | 38%   | 1.4x  | 1.4x  |  |
| <b>North America Weighted Average</b> |          |                |                 |                  |           |            |      |        |       |               |       | 1.6%           | 13.9x | 12.7x | 11.4x       | 10.0x | 67%        | 61%   | 2.0x  | 1.9x  |  |
| <b>China</b>                          |          |                |                 |                  |           |            |      |        |       |               |       |                |       |       |             |       |            |       |       |       |  |
| Zhongsheng Group                      | HKD      | 11.18          | 18.18           | 63%              | OW        | 21.3       | 2.7  | 1.00   | 1.44  | 0.99          | 1.30  | 1.3%           | 11.2x | 7.7x  | 5.6x        | 4.4x  | 43%        | 33%   | 2.0x  | 1.6x  |  |
| Baoxin Auto                           | HKD      | 6.05           | 10.40           | 72%              | OW        | 15.3       | 2.0  | 0.71   | 0.89  | 0.62          | 0.79  | NA             | 8.5x  | 6.8x  | 5.1x        | 4.0x  | 46%        | 34%   | 2.6x  | 1.8x  |  |
| <b>China Weighted Average</b>         |          |                |                 |                  |           |            |      |        |       |               |       | 1.3%           | 11.2x | 7.7x  | 5.6x        | 4.4x  | 43%        | 33%   | 2.0x  | 1.6x  |  |
| <b>Global Weighted Average</b>        |          |                |                 |                  |           |            |      |        |       |               |       | 1.4%           | 13.4x | 12.0x | 10.5x       | 9.1x  | 63%        | 56%   | 2.0x  | 1.8x  |  |

Source: Morgan Stanley Research, Thomson Reuters E = Morgan Stanley Research estimates  
O = Overweight; E = Equal-Weight; U = Underweight; NR = Not Rated; ++ = Restricted.

Please note that all important disclosures including personal holdings disclosures and Morgan Stanley disclosures appear on the Morgan Stanley public website at [www.morganstanley.com/researchdisclosures](http://www.morganstanley.com/researchdisclosures).

For valuation methodology and risks associated with any price targets above, please email [morganstanley.research@morganstanley.com](mailto:morganstanley.research@morganstanley.com) with a request for valuation methodology and risks on a particular stock.

June 5, 2012  
Global Auto Scenarios 2022

Exhibit 23

## Overall Scores

Overall scores by across key metrics (ranked by score, lower is better)

| Company Name          | Technology | Footprint | Financial | Strategy | Average | Total |
|-----------------------|------------|-----------|-----------|----------|---------|-------|
| Volkswagen            | 1.8        | 1.7       | 1.4       | 2.0      | 1.7     | 6.9   |
| BMW                   | 2.2        | 2.1       | 1.5       | 2.4      | 2.1     | 8.2   |
| Toyota Motors         | 2.0        | 2.1       | 1.8       | 2.5      | 2.1     | 8.3   |
| Hyundai MOBIS         | 2.2        | 2.1       | 2.0       | 2.1      | 2.1     | 8.5   |
| General Motors        | 2.3        | 2.1       | 2.0       | 2.4      | 2.2     | 8.8   |
| Hyundai               | 2.3        | 2.2       | 2.3       | 2.6      | 2.4     | 9.4   |
| Johnson Controls      | 2.1        | 2.3       | 2.7       | 2.5      | 2.4     | 9.6   |
| Nissan                | 2.4        | 2.3       | 2.8       | 2.3      | 2.4     | 9.8   |
| Halla Climate Control | 2.9        | 2.3       | 2.2       | 2.4      | 2.5     | 9.8   |
| Kia                   | 2.5        | 2.3       | 2.7       | 2.4      | 2.5     | 9.9   |
| Bridgestone           | 2.6        | 2.4       | 2.4       | 2.6      | 2.5     | 10.0  |
| Daimler               | 2.6        | 2.5       | 2.0       | 2.9      | 2.5     | 10.0  |
| Continental           | 2.4        | 2.4       | 2.8       | 2.4      | 2.5     | 10.0  |
| Delphi                | 2.5        | 2.5       | 2.6       | 2.6      | 2.5     | 10.1  |
| Hankook               | 2.7        | 2.4       | 2.5       | 2.5      | 2.6     | 10.2  |
| Denso                 | 2.5        | 2.6       | 2.4       | 2.8      | 2.6     | 10.3  |
| Michelin              | 2.6        | 2.5       | 2.6       | 2.7      | 2.6     | 10.4  |
| Sumitomo              | 2.6        | 2.6       | 2.6       | 3.0      | 2.7     | 10.8  |
| Autoliv               | 3.1        | 2.5       | 2.5       | 2.8      | 2.7     | 10.9  |
| Koito                 | 2.5        | 2.5       | 2.8       | 3.1      | 2.7     | 10.9  |
| Pirelli               | 2.7        | 2.7       | 2.6       | 2.9      | 2.7     | 10.9  |
| Honda                 | 2.6        | 2.7       | 2.7       | 3.0      | 2.8     | 11.1  |
| Takata                | 2.9        | 2.6       | 2.8       | 2.7      | 2.8     | 11.1  |
| Aisin Seiki           | 3.0        | 2.6       | 2.6       | 2.9      | 2.8     | 11.1  |
| Yokohama              | 2.8        | 2.7       | 2.7       | 3.1      | 2.8     | 11.2  |
| TRW Automotive        | 2.7        | 2.6       | 3.0       | 3.0      | 2.8     | 11.3  |
| Tata Motors           | 2.8        | 2.8       | 3.1       | 2.6      | 2.8     | 11.3  |
| BorgWarner            | 2.8        | 2.7       | 2.8       | 3.1      | 2.8     | 11.3  |
| Ford                  | 2.8        | 2.9       | 2.7       | 2.8      | 2.8     | 11.3  |
| Lear                  | 2.9        | 2.6       | 3.0       | 3.1      | 2.9     | 11.5  |
| Magna International   | 3.0        | 2.7       | 2.7       | 3.1      | 2.9     | 11.6  |
| Cheng Shin            | 2.9        | 2.5       | 3.3       | 3.0      | 2.9     | 11.6  |
| Valeo                 | 2.9        | 2.9       | 3.2       | 2.9      | 3.0     | 11.8  |
| Porsche               | 2.8        | 2.8       | 3.4       | 3.2      | 3.1     | 12.3  |
| Great Wall            | 3.3        | 3.1       | 3.2       | 3.0      | 3.1     | 12.5  |
| Brilliance            | 3.2        | 3.1       | 3.2       | 3.0      | 3.1     | 12.5  |
| Renault               | 3.1        | 3.3       | 3.3       | 2.9      | 3.1     | 12.6  |
| Dongfeng              | 3.4        | 2.9       | 3.3       | 3.0      | 3.2     | 12.6  |
| Goodyear              | 3.1        | 2.8       | 3.7       | 3.1      | 3.2     | 12.7  |
| Nokian                | 3.3        | 3.1       | 2.9       | 3.3      | 3.2     | 12.7  |
| NOK                   | 3.5        | 3.3       | 2.8       | 3.3      | 3.2     | 12.7  |
| Stanley Electric      | 3.3        | 3.4       | 2.9       | 3.3      | 3.2     | 12.8  |
| Dana                  | 3.3        | 2.9       | 3.1       | 3.5      | 3.2     | 12.8  |
| Harman                | 3.1        | 3.1       | 3.3       | 3.3      | 3.2     | 12.8  |
| Toyoda Gosei          | 3.2        | 3.2       | 3.0       | 3.6      | 3.3     | 13.0  |
| Toyota Boshoku        | 3.1        | 3.0       | 3.4       | 3.9      | 3.4     | 13.4  |
| Toyota Industries     | 2.9        | 3.6       | 3.0       | 3.9      | 3.4     | 13.4  |
| Suzuki                | 3.2        | 3.3       | 3.8       | 3.2      | 3.4     | 13.4  |
| Maruti Suzuki         | 3.3        | 3.3       | 3.5       | 3.3      | 3.4     | 13.4  |
| NHK Spring            | 3.4        | 3.5       | 3.0       | 3.7      | 3.4     | 13.5  |
| Mahindra & Mahindra   | 3.5        | 3.4       | 3.4       | 3.4      | 3.4     | 13.6  |
| Isuzu                 | 3.6        | 3.5       | 3.4       | 3.5      | 3.5     | 14.0  |
| Fuji Heavy            | 3.8        | 3.2       | 3.6       | 3.6      | 3.5     | 14.1  |
| Tesla                 | 3.3        | 3.5       | 3.9       | 3.5      | 3.5     | 14.2  |
| Tenneco               | 3.8        | 3.2       | 3.7       | 3.8      | 3.6     | 14.4  |
| Mazda                 | 3.5        | 3.5       | 4.0       | 3.5      | 3.6     | 14.5  |
| Daihatsu              | 3.9        | 3.7       | 3.5       | 3.7      | 3.7     | 14.8  |
| Mitsubishi            | 3.7        | 3.7       | 4.3       | 3.6      | 3.8     | 15.4  |
| Fiat                  | 3.8        | 3.9       | 4.3       | 3.8      | 3.9     | 15.7  |
| PSA Peugeot           | 3.9        | 3.9       | 4.3       | 3.9      | 4.0     | 16.0  |

Source: Company Data, Morgan Stanley Research

Overall scores across scenarios (alphabetical order)

| Company Name          | Detroit Revolution | Electric Avenue | If You Can't Beat EM, Join EM | Walmart on Wheels | Average |
|-----------------------|--------------------|-----------------|-------------------------------|-------------------|---------|
| BMW                   | 4.6                | 6.9             | 8.3                           | 13.0              | 8.2     |
| Brilliance            | 14.7               | 16.6            | 9.7                           | 9.2               | 12.5    |
| Daihatsu Motor        | 17.8               | 16.5            | 12.5                          | 12.5              | 14.8    |
| Daimler               | 6.6                | 9.0             | 10.0                          | 14.6              | 10.0    |
| Dongfeng              | 16.9               | 16.2            | 8.8                           | 8.5               | 12.6    |
| Fiat Auto             | 13.6               | 16.4            | 16.5                          | 16.4              | 15.7    |
| Ford Motor            | 7.9                | 11.4            | 12.7                          | 13.4              | 11.3    |
| Fuji Heavy            | 12.3               | 16.3            | 14.2                          | 13.8              | 14.1    |
| General Motors        | 6.9                | 9.3             | 8.5                           | 10.3              | 8.8     |
| Great Wall            | 16.1               | 17.2            | 9.1                           | 7.9               | 12.5    |
| Honda Motor           | 9.5                | 11.2            | 11.8                          | 11.7              | 11.1    |
| Hyundai Motor         | 8.8                | 11.6            | 8.7                           | 8.6               | 9.4     |
| Isuzu Motors          | 15.0               | 16.7            | 11.6                          | 12.5              | 14.0    |
| Kia Motors            | 9.4                | 12.3            | 9.2                           | 8.7               | 9.9     |
| Mahindra & Mahindra   | 16.5               | 18.2            | 10.2                          | 9.5               | 13.6    |
| Maruti Suzuki         | 16.8               | 18.4            | 9.6                           | 8.9               | 13.4    |
| Mazda Motor           | 13.5               | 15.6            | 14.2                          | 14.6              | 14.5    |
| Mitsubishi Motors     | 16.6               | 15.8            | 14.7                          | 14.2              | 15.4    |
| Nissan Motor          | 10.3               | 9.6             | 9.4                           | 9.9               | 9.8     |
| Porsche               | 8.8                | 13.0            | 13.3                          | 13.9              | 12.3    |
| PSA Peugeot           | 14.1               | 16.3            | 17.2                          | 16.5              | 16.0    |
| Renault               | 12.3               | 11.0            | 13.6                          | 13.4              | 12.6    |
| Suzuki Motor          | 14.6               | 15.6            | 12.6                          | 10.9              | 13.4    |
| Tata Motors           | 13.0               | 16.2            | 7.8                           | 8.2               | 11.3    |
| Tesla                 | 14.6               | 8.3             | 15.8                          | 18.1              | 14.2    |
| Toyota Motor          | 6.9                | 8.2             | 8.8                           | 9.4               | 8.3     |
| Volkswagen            | 5.2                | 7.2             | 6.8                           | 8.3               | 6.9     |
| Aisin Seiki           | 8.3                | 12.2            | 11.3                          | 12.6              | 11.1    |
| Autoliv               | 9.6                | 11.9            | 10.1                          | 12.0              | 10.9    |
| BorgWarner Inc.       | 6.2                | 12.4            | 11.3                          | 15.4              | 11.3    |
| Bridgestone           | 8.1                | 10.7            | 9.8                           | 11.3              | 10.0    |
| Cheng Shin Rubber     | 14.6               | 13.6            | 8.7                           | 9.6               | 11.6    |
| Continental           | 6.7                | 10.1            | 10.6                          | 12.8              | 10.0    |
| Dana                  | 11.2               | 13.6            | 12.7                          | 13.8              | 12.8    |
| Delphi                | 7.8                | 11.1            | 9.3                           | 12.2              | 10.1    |
| Denso                 | 8.4                | 10.2            | 10.0                          | 12.6              | 10.3    |
| Goodyear              | 10.3               | 13.2            | 13.2                          | 13.9              | 12.7    |
| Halla Climate Control | 9.6                | 10.9            | 8.7                           | 10.2              | 9.8     |
| Hankook Tire          | 11.0               | 13.3            | 8.6                           | 8.0               | 10.2    |
| Harman                | 10.3               | 11.3            | 13.2                          | 16.5              | 12.8    |
| Hyundai MOBIS         | 8.3                | 8.6             | 7.7                           | 9.3               | 8.5     |
| Johnson Controls      | 7.6                | 9.3             | 9.7                           | 11.9              | 9.6     |
| Koito Mfg.            | 9.5                | 10.0            | 11.2                          | 13.0              | 10.9    |
| Lear                  | 10.5               | 11.2            | 11.7                          | 12.7              | 11.5    |
| Magna International   | 9.7                | 11.9            | 11.7                          | 13.1              | 11.6    |
| Michelin              | 8.2                | 10.8            | 10.4                          | 12.0              | 10.4    |
| NHK Spring            | 13.0               | 10.0            | 14.5                          | 16.0              | 13.5    |
| NOK                   | 13.0               | 9.0             | 14.0                          | 14.8              | 12.7    |
| Nokian Tyres          | 10.7               | 12.6            | 13.3                          | 14.0              | 12.7    |
| Pirelli & C. SpA      | 8.0                | 10.8            | 11.0                          | 14.0              | 10.9    |
| Stanley Electric      | 13.0               | 9.5             | 13.7                          | 15.0              | 12.8    |
| Sumitomo Rubber       | 9.8                | 11.1            | 11.0                          | 11.4              | 10.8    |
| Takata                | 10.5               | 10.0            | 10.7                          | 13.1              | 11.1    |
| Tenneco               | 12.2               | 16.9            | 14.3                          | 14.0              | 14.4    |
| Toyoda Gosei          | 11.5               | 13.5            | 14.3                          | 12.7              | 13.0    |
| Toyota Boshoku        | 13.7               | 13.0            | 14.2                          | 12.8              | 13.4    |
| Toyota Industries     | 13.0               | 11.0            | 15.3                          | 14.3              | 13.4    |
| TRW Automotive        | 9.5                | 11.2            | 11.2                          | 13.2              | 11.3    |
| Valeo S.A.            | 9.2                | 11.2            | 12.6                          | 14.4              | 11.8    |
| Yokohama Rubber       | 10.3               | 11.1            | 11.8                          | 11.5              | 11.2    |

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Exhibit 24

**Scores Across All Scenarios (alphabetical order, lower score is better)**

| OEMs                |                    |                 |                               |                   | Parts & Tires         |                    |                 |                               |                   |
|---------------------|--------------------|-----------------|-------------------------------|-------------------|-----------------------|--------------------|-----------------|-------------------------------|-------------------|
| Company Name        | Detroit Revolution | Electric Avenue | If You Can't Beat EM, Join EM | Walmart on Wheels | Company Name          | Detroit Revolution | Electric Avenue | If You Can't Beat EM, Join EM | Walmart on Wheels |
| BMW                 | 4.6                | 6.9             | 8.3                           | 13.0              | Aisin Seiki           | 8.3                | 12.2            | 11.3                          | 12.6              |
| Brilliance          | 14.7               | 16.6            | 9.7                           | 9.2               | Autoliv               | 9.6                | 11.9            | 10.1                          | 12.0              |
| Daihatsu Motor      | 17.8               | 16.5            | 12.5                          | 12.5              | BorgWarner Inc.       | 6.2                | 12.4            | 11.3                          | 15.4              |
| Daimler             | 6.6                | 9.0             | 10.0                          | 14.6              | Bridgestone           | 8.1                | 10.7            | 9.8                           | 11.3              |
| Dongfeng            | 16.9               | 16.2            | 8.8                           | 8.5               | Cheng Shin Rubber     | 14.6               | 13.6            | 8.7                           | 9.6               |
| Fiat Auto           | 13.6               | 16.4            | 16.5                          | 16.4              | Continental           | 6.7                | 10.1            | 10.6                          | 12.8              |
| Ford Motor          | 7.9                | 11.4            | 12.7                          | 13.4              | Dana                  | 11.2               | 13.6            | 12.7                          | 13.8              |
| Fuji Heavy          | 12.3               | 16.3            | 14.2                          | 13.8              | Delphi                | 7.8                | 11.1            | 9.3                           | 12.2              |
| General Motors      | 6.9                | 9.3             | 8.5                           | 10.3              | Denso                 | 8.4                | 10.2            | 10.0                          | 12.6              |
| Great Wall          | 16.1               | 17.2            | 9.1                           | 7.9               | Goodyear              | 10.3               | 13.2            | 13.2                          | 13.9              |
| Honda Motor         | 9.5                | 11.2            | 11.8                          | 11.7              | Halla Climate Control | 9.6                | 10.9            | 8.7                           | 10.2              |
| Hyundai Motor       | 8.8                | 11.6            | 8.7                           | 8.6               | Hankook Tire          | 11.0               | 13.3            | 8.6                           | 8.0               |
| Isuzu Motors        | 15.0               | 16.7            | 11.6                          | 12.5              | Harman                | 10.3               | 11.3            | 13.2                          | 16.5              |
| Kia Motors          | 9.4                | 12.3            | 9.2                           | 8.7               | Hyundai MOBIS         | 8.3                | 8.6             | 7.7                           | 9.3               |
| Mahindra & Mahindra | 16.5               | 18.2            | 10.2                          | 9.5               | Johnson Controls      | 7.6                | 9.3             | 9.7                           | 11.9              |
| Maruti Suzuki       | 16.8               | 18.4            | 9.6                           | 8.9               | Koito Mfg.            | 9.5                | 10.0            | 11.2                          | 13.0              |
| Mazda Motor         | 13.5               | 15.6            | 14.2                          | 14.6              | Lear                  | 10.5               | 11.2            | 11.7                          | 12.7              |
| Mitsubishi Motors   | 16.6               | 15.8            | 14.7                          | 14.2              | Magna International   | 9.7                | 11.9            | 11.7                          | 13.1              |
| Nissan Motor        | 10.3               | 9.6             | 9.4                           | 9.9               | Michelin              | 8.2                | 10.8            | 10.4                          | 12.0              |
| Porsche             | 8.8                | 13.0            | 13.3                          | 13.9              | NHK Spring            | 13.0               | 10.0            | 14.5                          | 16.0              |
| PSA Peugeot         | 14.1               | 16.3            | 17.2                          | 16.5              | NOK                   | 13.0               | 9.0             | 14.0                          | 14.8              |
| Renault             | 12.3               | 11.0            | 13.6                          | 13.4              | Nokian Tyres          | 10.7               | 12.6            | 13.3                          | 14.0              |
| Suzuki Motor        | 14.6               | 15.6            | 12.6                          | 10.9              | Pirelli & C. SpA      | 8.0                | 10.8            | 11.0                          | 14.0              |
| Tata Motors         | 13.0               | 16.2            | 7.8                           | 8.2               | Stanley Electric      | 13.0               | 9.5             | 13.7                          | 15.0              |
| Tesla               | 14.6               | 8.3             | 15.8                          | 18.1              | Sumitomo Rubber       | 9.8                | 11.1            | 11.0                          | 11.4              |
| Toyota Motor        | 6.9                | 8.2             | 8.8                           | 9.4               | Takata                | 10.5               | 10.0            | 10.7                          | 13.1              |
| Volkswagen          | 5.2                | 7.2             | 6.8                           | 8.3               | Tenneco               | 12.2               | 16.9            | 14.3                          | 14.0              |
|                     |                    |                 |                               |                   | Toyoda Gosei          | 11.5               | 13.5            | 14.3                          | 12.7              |
|                     |                    |                 |                               |                   | Toyota Boshoku        | 13.7               | 13.0            | 14.2                          | 12.8              |
|                     |                    |                 |                               |                   | Toyota Industries     | 13.0               | 11.0            | 15.3                          | 14.3              |
|                     |                    |                 |                               |                   | TRW Automotive        | 9.5                | 11.2            | 11.2                          | 13.2              |
|                     |                    |                 |                               |                   | Valeo S.A.            | 9.2                | 11.2            | 12.6                          | 14.4              |
|                     |                    |                 |                               |                   | Yokohama Rubber       | 10.3               | 11.1            | 11.8                          | 11.5              |

Source: Company Data, Morgan Stanley Research

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Exhibit 25

**Rank Across All Scenarios (alphabetical order, lower rank is better)**

| OEMs                |                    |                 |                               |                   | Parts & Tires         |                    |                 |                               |                   |
|---------------------|--------------------|-----------------|-------------------------------|-------------------|-----------------------|--------------------|-----------------|-------------------------------|-------------------|
| Company Name        | Detroit Revolution | Electric Avenue | If You Can't Beat EM, Join EM | Walmart on Wheels | Company Name          | Detroit Revolution | Electric Avenue | If You Can't Beat EM, Join EM | Walmart on Wheels |
| BMW                 | 1                  | 1               | 4                             | 34                | Aisin Seiki           | 15                 | 35              | 32                            | 29                |
| Brilliance          | 53                 | 55              | 18                            | 9                 | Autoliv               | 24                 | 33              | 22                            | 24                |
| Daihatsu Motor      | 60                 | 54              | 38                            | 26                | BorgWarner Inc.       | 3                  | 37              | 31                            | 55                |
| Daimler             | 4                  | 6               | 21                            | 51                | Bridgestone           | 12                 | 17              | 19                            | 18                |
| Dongfeng            | 59                 | 50              | 11                            | 5                 | Cheng Shin Rubber     | 51                 | 44              | 7                             | 13                |
| Fiat Auto           | 47                 | 53              | 59                            | 57                | Continental           | 5                  | 15              | 25                            | 32                |
| Ford Motor          | 10                 | 31              | 41                            | 40                | Dana                  | 36                 | 45              | 42                            | 41                |
| Fuji Heavy          | 39                 | 51              | 50                            | 42                | Delphi                | 9                  | 25              | 14                            | 25                |
| General Motors      | 6                  | 9               | 5                             | 16                | Denso                 | 16                 | 16              | 20                            | 28                |
| Great Wall          | 55                 | 58              | 12                            | 1                 | Goodyear              | 29                 | 41              | 44                            | 44                |
| Honda Motor         | 21                 | 28              | 36                            | 21                | Halla Climate Control | 25                 | 20              | 8                             | 15                |
| Hyundai Motor       | 18                 | 32              | 9                             | 6                 | Hankook Tire          | 35                 | 42              | 6                             | 2                 |
| Isuzu Motors        | 54                 | 56              | 33                            | 27                | Harman                | 31                 | 30              | 43                            | 58                |
| Kia Motors          | 20                 | 36              | 13                            | 7                 | Hyundai MOBIS         | 14                 | 5               | 2                             | 10                |
| Mahindra & Mahindra | 56                 | 59              | 23                            | 12                | Johnson Controls      | 8                  | 8               | 17                            | 22                |
| Maruti Suzuki       | 58                 | 60              | 16                            | 8                 | Koito Mfg.            | 22                 | 12              | 29                            | 35                |
| Mazda Motor         | 46                 | 47              | 52                            | 52                | Lear                  | 32                 | 26              | 35                            | 31                |
| Mitsubishi Motors   | 57                 | 48              | 56                            | 48                | Magna International   | 26                 | 34              | 34                            | 36                |
| Nissan Motor        | 28                 | 11              | 15                            | 14                | Michelin              | 13                 | 18              | 24                            | 23                |
| Porsche             | 17                 | 40              | 45                            | 43                | NHK Spring            | 41                 | 12              | 55                            | 56                |
| PSA Peugeot         | 49                 | 52              | 60                            | 59                | NOK                   | 41                 | 7               | 49                            | 53                |
| Renault             | 40                 | 22              | 47                            | 39                | Nokian Tyres          | 34                 | 38              | 46                            | 45                |
| Suzuki Motor        | 50                 | 46              | 39                            | 17                | Pirelli & C. SpA      | 11                 | 19              | 27                            | 47                |
| Tata Motors         | 45                 | 49              | 3                             | 3                 | Stanley Electric      | 41                 | 10              | 48                            | 54                |
| Tesla               | 52                 | 4               | 58                            | 60                | Sumitomo Rubber       | 27                 | 23              | 28                            | 19                |
| Toyota Motor        | 7                  | 3               | 10                            | 11                | Takata                | 32                 | 12              | 26                            | 37                |
| Volkswagen          | 2                  | 2               | 1                             | 4                 | Tenneco               | 38                 | 57              | 53                            | 45                |
|                     |                    |                 |                               |                   | Toyoda Gosei          | 37                 | 43              | 54                            | 30                |
|                     |                    |                 |                               |                   | Toyota Boshoku        | 48                 | 39              | 51                            | 33                |
|                     |                    |                 |                               |                   | Toyota Industries     | 41                 | 21              | 57                            | 49                |
|                     |                    |                 |                               |                   | TRW Automotive        | 23                 | 26              | 30                            | 38                |
|                     |                    |                 |                               |                   | Valeo S.A.            | 19                 | 29              | 40                            | 50                |
|                     |                    |                 |                               |                   | Yokohama Rubber       | 30                 | 23              | 37                            | 20                |

Source: Company Data, Morgan Stanley Research

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Exhibit 26

**Detroit Revolution: Valuation vs. Ranking (alphabetical order)**

| OEMs                |           |             |         | Parts & Tires         |           |             |         |
|---------------------|-----------|-------------|---------|-----------------------|-----------|-------------|---------|
| Company             | Ticker    | P/E<br>2013 | Ranking | Company               | Ticker    | P/E<br>2013 | Ranking |
| BMW                 | BMWG.DE   | 6.3x        | 1       | Aisin Seiki           | 7259.T    | 7.7x        | 15      |
| Brilliance          | 1114.HK   | 12.5x       | 53      | Autoliv               | ALV.N     | 7.2x        | 24      |
| Daihatsu Motor      | 7262.T    | 8.5x        | 60      | BorgWarner Inc.       | BWA.N     | 8.8x        | 3       |
| Daimler             | DAIGn.DE  | 5.2x        | 4       | Bridgestone           | 5108.T    | 6.6x        | 12      |
| Dongfeng            | 0489.HK   | 8.6x        | 59      | Cheng Shin Rubber     | 2105.TW   | 11.5x       | 51      |
| Fiat Auto           | FIA.MI    | 3.6x        | 47      | Continental           | CONG.DE   | 5.3x        | 5       |
| Ford Motor          | F.N       | 5.6x        | 10      | Dana                  | DAN.N     | 4.9x        | 36      |
| Fuji Heavy          | 7270.T    | 7.9x        | 39      | Delphi                | DLPH.N    | 6.3x        | 9       |
| General Motors      | GM.N      | 4.0x        | 6       | Denso                 | 6902.T    | 9.9x        | 16      |
| Great Wall          | 2333.HK   | 10.2x       | 55      | Goodyear              | GT.N      | 4.2x        | 29      |
| Honda Motor         | 7267.T    | 7.0x        | 21      | Halla Climate Control | 018880.KS | 7.5x        | 25      |
| Hyundai Motor       | 005380.KS | 6.9x        | 18      | Hankook Tire          | 000240.KS | 9.8x        | 35      |
| Isuzu Motors        | 7202.T    | 7.8x        | 54      | Harman                | HAR.N     | 9.7x        | 31      |
| Kia Motors          | 000270.KS | 6.7x        | 20      | Hyundai MOBIS         | 012330.KS | 7.0x        | 14      |
| Mahindra & Mahindra | MAHM.BO   | 10.0x       | 56      | Johnson Controls      | JCI.N     | 8.2x        | 8       |
| Maruti Suzuki       | MRTI.BO   | 8.9x        | 58      | Koito Mfg.            | 7276.T    | 6.1x        | 22      |
| Mazda Motor         | 7261.T    | 5.8x        | 46      | Lear                  | LEA.N     | 6.2x        | 32      |
| Mitsubishi Motors   | 7211.T    | 6.8x        | 57      | Magna International   | MGA.N     | 5.8x        | 26      |
| Nissan Motor        | 7201.T    | 5.6x        | 28      | Michelin              | MICP.PA   | 5.3x        | 13      |
| Porsche             | PSHG_p.DE | 3.2x        | 17      | NHK Spring            | 5991.T    | 8.2x        | 41      |
| PSA Peugeot         | PEUP.PA   | 2.9x        | 49      | NOK                   | 7240.T    | 9.3x        | 41      |
| Renault             | RENA.PA   | 2.3x        | 40      | Nokian Tyres          | NRE1V.HE  | 8.4x        | 34      |
| Suzuki Motor        | 7269.T    | 10.7x       | 50      | Pirelli & C. SpA      | PECI.MI   | 6.5x        | 11      |
| Tata Motors         | TAMO.BO   | 5.7x        | 45      | Stanley Electric      | 6923.T    | 8.5x        | 41      |
| Tesla               | TSLA.O    | N/A         | 52      | Sumitomo Rubber       | 5110.T    | 6.1x        | 27      |
| Toyota Motor        | 7203.T    | 7.9x        | 7       | Takata                | 7312.T    | 6.7x        | 32      |
| Volkswagen          | VOWG_p.DE | 4.7x        | 2       | Tenneco               | TEN.N     | 5.8x        | 38      |
|                     |           |             |         | Toyoda Gosei          | 7282.T    | 8.8x        | 37      |
|                     |           |             |         | Toyota Boshoku        | 3116.T    | 7.9x        | 48      |
|                     |           |             |         | Toyota Industries     | 6201.T    | 9.9x        | 41      |
|                     |           |             |         | TRW Automotive        | TRW.N     | 5.7x        | 23      |
|                     |           |             |         | Valeo S.A.            | VLOF.PA   | 4.6x        | 19      |
|                     |           |             |         | Yokohama Rubber       | 5101.T    | 6.6x        | 30      |

Source: Company Data, Morgan Stanley Research

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Exhibit 27

**Electric Avenue: Valuation vs. Ranking (alphabetical order)**

| OEMs                |           |             |         | Parts & Tires         |           |             |         |
|---------------------|-----------|-------------|---------|-----------------------|-----------|-------------|---------|
| Company             | Ticker    | P/E<br>2013 | Ranking | Company               | Ticker    | P/E<br>2013 | Ranking |
| BMW                 | BMWG.DE   | 6.3x        | 1       | Aisin Seiki           | 7259.T    | 7.7x        | 35      |
| Brilliance          | 1114.HK   | 12.5x       | 55      | Autoliv               | ALV.N     | 7.2x        | 33      |
| Daihatsu Motor      | 7262.T    | 8.5x        | 54      | BorgWarner Inc.       | BWA.N     | 8.8x        | 37      |
| Daimler             | DAIGn.DE  | 5.2x        | 6       | Bridgestone           | 5108.T    | 6.6x        | 17      |
| Dongfeng            | 0489.HK   | 8.6x        | 50      | Cheng Shin Rubber     | 2105.TW   | 11.5x       | 44      |
| Fiat Auto           | FIA.MI    | 3.6x        | 53      | Continental           | CONG.DE   | 5.3x        | 15      |
| Ford Motor          | F.N       | 5.6x        | 31      | Dana                  | DAN.N     | 4.9x        | 45      |
| Fuji Heavy          | 7270.T    | 7.9x        | 51      | Delphi                | DLPH.N    | 6.3x        | 25      |
| General Motors      | GM.N      | 4.0x        | 9       | Denso                 | 6902.T    | 9.9x        | 16      |
| Great Wall          | 2333.HK   | 10.2x       | 58      | Goodyear              | GT.N      | 4.2x        | 41      |
| Honda Motor         | 7267.T    | 7.0x        | 28      | Halla Climate Control | 018880.KS | 7.5x        | 20      |
| Hyundai Motor       | 005380.KS | 6.9x        | 32      | Hankook Tire          | 000240.KS | 9.8x        | 42      |
| Isuzu Motors        | 7202.T    | 7.8x        | 56      | Harman                | HAR.N     | 9.7x        | 30      |
| Kia Motors          | 000270.KS | 6.7x        | 36      | Hyundai MOBIS         | 012330.KS | 7.0x        | 5       |
| Mahindra & Mahindra | MAHM.BO   | 10.0x       | 59      | Johnson Controls      | JCI.N     | 8.2x        | 8       |
| Maruti Suzuki       | MRTI.BO   | 8.9x        | 60      | Koito Mfg.            | 7276.T    | 6.1x        | 12      |
| Mazda Motor         | 7261.T    | 5.8x        | 47      | Lear                  | LEA.N     | 6.2x        | 26      |
| Mitsubishi Motors   | 7211.T    | 6.8x        | 48      | Magna International   | MGA.N     | 5.8x        | 34      |
| Nissan Motor        | 7201.T    | 5.6x        | 11      | Michelin              | MICP.PA   | 5.3x        | 18      |
| Porsche             | PSHG_p.DE | 3.2x        | 40      | NHK Spring            | 5991.T    | 8.2x        | 12      |
| PSA Peugeot         | PEUP.PA   | 2.9x        | 52      | NOK                   | 7240.T    | 9.3x        | 7       |
| Renault             | RENA.PA   | 2.3x        | 22      | Nokian Tyres          | NRE1V.HE  | 8.4x        | 38      |
| Suzuki Motor        | 7269.T    | 10.7x       | 46      | Pirelli & C. SpA      | PECI.MI   | 6.5x        | 19      |
| Tata Motors         | TAMO.BO   | 5.7x        | 49      | Stanley Electric      | 6923.T    | 8.5x        | 10      |
| Tesla               | TSLA.O    | N/A         | 4       | Sumitomo Rubber       | 5110.T    | 6.1x        | 23      |
| Toyota Motor        | 7203.T    | 7.9x        | 3       | Takata                | 7312.T    | 6.7x        | 12      |
| Volkswagen          | VOWG_p.DE | 4.7x        | 2       | Tenneco               | TEN.N     | 5.8x        | 57      |
|                     |           |             |         | Toyoda Gosei          | 7282.T    | 8.8x        | 43      |
|                     |           |             |         | Toyota Boshoku        | 3116.T    | 7.9x        | 39      |
|                     |           |             |         | Toyota Industries     | 6201.T    | 9.9x        | 21      |
|                     |           |             |         | TRW Automotive        | TRW.N     | 5.7x        | 26      |
|                     |           |             |         | Valeo S.A.            | VLOF.PA   | 4.6x        | 29      |
|                     |           |             |         | Yokohama Rubber       | 5101.T    | 6.6x        | 23      |

Source: Company Data, Morgan Stanley Research

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Exhibit 28

**If You Can't Beat EM, Join EM: Valuation vs. Ranking (alphabetical order)**

| OEMs                |           |             |         | Parts & Tires         |           |             |         |
|---------------------|-----------|-------------|---------|-----------------------|-----------|-------------|---------|
| Company             | Ticker    | P/E<br>2013 | Ranking | Company               | Ticker    | P/E<br>2013 | Ranking |
| BMW                 | BMWG.DE   | 6.3x        | 4       | Aisin Seiki           | 7259.T    | 7.7x        | 32      |
| Brilliance          | 1114.HK   | 12.5x       | 18      | Autoliv               | ALV.N     | 7.2x        | 22      |
| Daihatsu Motor      | 7262.T    | 8.5x        | 38      | BorgWarner Inc.       | BWA.N     | 8.8x        | 31      |
| Daimler             | DAIGn.DE  | 5.2x        | 21      | Bridgestone           | 5108.T    | 6.6x        | 19      |
| Dongfeng            | 0489.HK   | 8.6x        | 11      | Cheng Shin Rubber     | 2105.TW   | 11.5x       | 7       |
| Fiat Auto           | FIA.MI    | 3.6x        | 59      | Continental           | CONG.DE   | 5.3x        | 25      |
| Ford Motor          | F.N       | 5.6x        | 41      | Dana                  | DAN.N     | 4.9x        | 42      |
| Fuji Heavy          | 7270.T    | 7.9x        | 50      | Delphi                | DLPH.N    | 6.3x        | 14      |
| General Motors      | GM.N      | 4.0x        | 5       | Denso                 | 6902.T    | 9.9x        | 20      |
| Great Wall          | 2333.HK   | 10.2x       | 12      | Goodyear              | GT.N      | 4.2x        | 44      |
| Honda Motor         | 7267.T    | 7.0x        | 36      | Halla Climate Control | 018880.KS | 7.5x        | 8       |
| Hyundai Motor       | 005380.KS | 6.9x        | 9       | Hankook Tire          | 000240.KS | 9.8x        | 6       |
| Isuzu Motors        | 7202.T    | 7.8x        | 33      | Harman                | HAR.N     | 9.7x        | 43      |
| Kia Motors          | 000270.KS | 6.7x        | 13      | Hyundai MOBIS         | 012330.KS | 7.0x        | 2       |
| Mahindra & Mahindra | MAHM.BO   | 10.0x       | 23      | Johnson Controls      | JCI.N     | 8.2x        | 17      |
| Maruti Suzuki       | MRTI.BO   | 8.9x        | 16      | Koito Mfg.            | 7276.T    | 6.1x        | 29      |
| Mazda Motor         | 7261.T    | 5.8x        | 52      | Lear                  | LEA.N     | 6.2x        | 35      |
| Mitsubishi Motors   | 7211.T    | 6.8x        | 56      | Magna International   | MGA.N     | 5.8x        | 34      |
| Nissan Motor        | 7201.T    | 5.6x        | 15      | Michelin              | MICP.PA   | 5.3x        | 24      |
| Porsche             | PSHG_p.DE | 3.2x        | 45      | NHK Spring            | 5991.T    | 8.2x        | 55      |
| PSA Peugeot         | PEUP.PA   | 2.9x        | 60      | NOK                   | 7240.T    | 9.3x        | 49      |
| Renault             | RENA.PA   | 2.3x        | 47      | Nokian Tyres          | NRE1V.HE  | 8.4x        | 46      |
| Suzuki Motor        | 7269.T    | 10.7x       | 39      | Pirelli & C. SpA      | PECI.MI   | 6.5x        | 27      |
| Tata Motors         | TAMO.BO   | 5.7x        | 3       | Stanley Electric      | 6923.T    | 8.5x        | 48      |
| Tesla               | TSLA.O    | N/A         | 58      | Sumitomo Rubber       | 5110.T    | 6.1x        | 28      |
| Toyota Motor        | 7203.T    | 7.9x        | 10      | Takata                | 7312.T    | 6.7x        | 26      |
| Volkswagen          | VOWG_p.DE | 4.7x        | 1       | Tenneco               | TEN.N     | 5.8x        | 53      |
|                     |           |             |         | Toyoda Gosei          | 7282.T    | 8.8x        | 54      |
|                     |           |             |         | Toyota Boshoku        | 3116.T    | 7.9x        | 51      |
|                     |           |             |         | Toyota Industries     | 6201.T    | 9.9x        | 57      |
|                     |           |             |         | TRW Automotive        | TRW.N     | 5.7x        | 30      |
|                     |           |             |         | Valeo S.A.            | VLOF.PA   | 4.6x        | 40      |
|                     |           |             |         | Yokohama Rubber       | 5101.T    | 6.6x        | 37      |

Source: Company Data, Morgan Stanley Research

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Exhibit 29

**Walmart on Wheels: Valuation vs. Ranking (alphabetical order)**

| OEMs                |           |             |         | Parts & Tires         |           |             |         |
|---------------------|-----------|-------------|---------|-----------------------|-----------|-------------|---------|
| Company             | Ticker    | P/E<br>2013 | Ranking | Company               | Ticker    | P/E<br>2013 | Ranking |
| BMW                 | BMWG.DE   | 6.3x        | 34      | Aisin Seiki           | 7259.T    | 7.7x        | 29      |
| Brilliance          | 1114.HK   | 12.5x       | 9       | Autoliv               | ALV.N     | 7.2x        | 24      |
| Daihatsu Motor      | 7262.T    | 8.5x        | 26      | BorgWarner Inc.       | BWA.N     | 8.8x        | 55      |
| Daimler             | DAIGn.DE  | 5.2x        | 51      | Bridgestone           | 5108.T    | 6.6x        | 18      |
| Dongfeng            | 0489.HK   | 8.6x        | 5       | Cheng Shin Rubber     | 2105.TW   | 11.5x       | 13      |
| Fiat Auto           | FIA.MI    | 3.6x        | 57      | Continental           | CONG.DE   | 5.3x        | 32      |
| Ford Motor          | F.N       | 5.6x        | 40      | Dana                  | DAN.N     | 4.9x        | 41      |
| Fuji Heavy          | 7270.T    | 7.9x        | 42      | Delphi                | DLPH.N    | 6.3x        | 25      |
| General Motors      | GM.N      | 4.0x        | 16      | Denso                 | 6902.T    | 9.9x        | 28      |
| Great Wall          | 2333.HK   | 10.2x       | 1       | Goodyear              | GT.N      | 4.2x        | 44      |
| Honda Motor         | 7267.T    | 7.0x        | 21      | Halla Climate Control | 018880.KS | 7.5x        | 15      |
| Hyundai Motor       | 005380.KS | 6.9x        | 6       | Hankook Tire          | 000240.KS | 9.8x        | 2       |
| Isuzu Motors        | 7202.T    | 7.8x        | 27      | Harman                | HAR.N     | 9.7x        | 58      |
| Kia Motors          | 000270.KS | 6.7x        | 7       | Hyundai MOBIS         | 012330.KS | 7.0x        | 10      |
| Mahindra & Mahindra | MAHM.BO   | 10.0x       | 12      | Johnson Controls      | JCI.N     | 8.2x        | 22      |
| Maruti Suzuki       | MRTI.BO   | 8.9x        | 8       | Koito Mfg.            | 7276.T    | 6.1x        | 35      |
| Mazda Motor         | 7261.T    | 5.8x        | 52      | Lear                  | LEA.N     | 6.2x        | 31      |
| Mitsubishi Motors   | 7211.T    | 6.8x        | 48      | Magna International   | MGA.N     | 5.8x        | 36      |
| Nissan Motor        | 7201.T    | 5.6x        | 14      | Michelin              | MICP.PA   | 5.3x        | 23      |
| Porsche             | PSHG_p.DE | 3.2x        | 43      | NHK Spring            | 5991.T    | 8.2x        | 56      |
| PSA Peugeot         | PEUP.PA   | 2.9x        | 59      | NOK                   | 7240.T    | 9.3x        | 53      |
| Renault             | RENA.PA   | 2.3x        | 39      | Nokian Tyres          | NRE1V.HE  | 8.4x        | 45      |
| Suzuki Motor        | 7269.T    | 10.7x       | 17      | Pirelli & C. SpA      | PECI.MI   | 6.5x        | 47      |
| Tata Motors         | TAMO.BO   | 5.7x        | 3       | Stanley Electric      | 6923.T    | 8.5x        | 54      |
| Tesla               | TSLA.O    | N/A         | 60      | Sumitomo Rubber       | 5110.T    | 6.1x        | 19      |
| Toyota Motor        | 7203.T    | 7.9x        | 11      | Takata                | 7312.T    | 6.7x        | 37      |
| Volkswagen          | VOWG_p.DE | 4.7x        | 4       | Tenneco               | TEN.N     | 5.8x        | 45      |
|                     |           |             |         | Toyoda Gosei          | 7282.T    | 8.8x        | 30      |
|                     |           |             |         | Toyota Boshoku        | 3116.T    | 7.9x        | 33      |
|                     |           |             |         | Toyota Industries     | 6201.T    | 9.9x        | 49      |
|                     |           |             |         | TRW Automotive        | TRW.N     | 5.7x        | 38      |
|                     |           |             |         | Valeo S.A.            | VLOF.PA   | 4.6x        | 50      |
|                     |           |             |         | Yokohama Rubber       | 5101.T    | 6.6x        | 20      |

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**Global Stock Ratings Distribution**  
(as of May 31, 2012)

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| Stock Rating Category    | Coverage Universe |            | Investment Banking Clients (IBC) |            |                      |
|--------------------------|-------------------|------------|----------------------------------|------------|----------------------|
|                          | Count             | % of Total | Count                            | Total IBC  | % of Rating Category |
| <b>Overweight/Buy</b>    | <b>1133</b>       | <b>38%</b> | <b>471</b>                       | <b>43%</b> | <b>42%</b>           |
| <b>Equal-weight/Hold</b> | <b>1250</b>       | <b>42%</b> | <b>472</b>                       | <b>43%</b> | <b>38%</b>           |
| <b>Not-Rated/Hold</b>    | <b>99</b>         | <b>3%</b>  | <b>27</b>                        | <b>2%</b>  | <b>27%</b>           |
| <b>Underweight/Sell</b>  | <b>461</b>        | <b>16%</b> | <b>121</b>                       | <b>11%</b> | <b>26%</b>           |
| <b>Total</b>             | <b>2,943</b>      |            | <b>1091</b>                      |            |                      |

Data include common stock and ADRs currently assigned ratings. An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months.

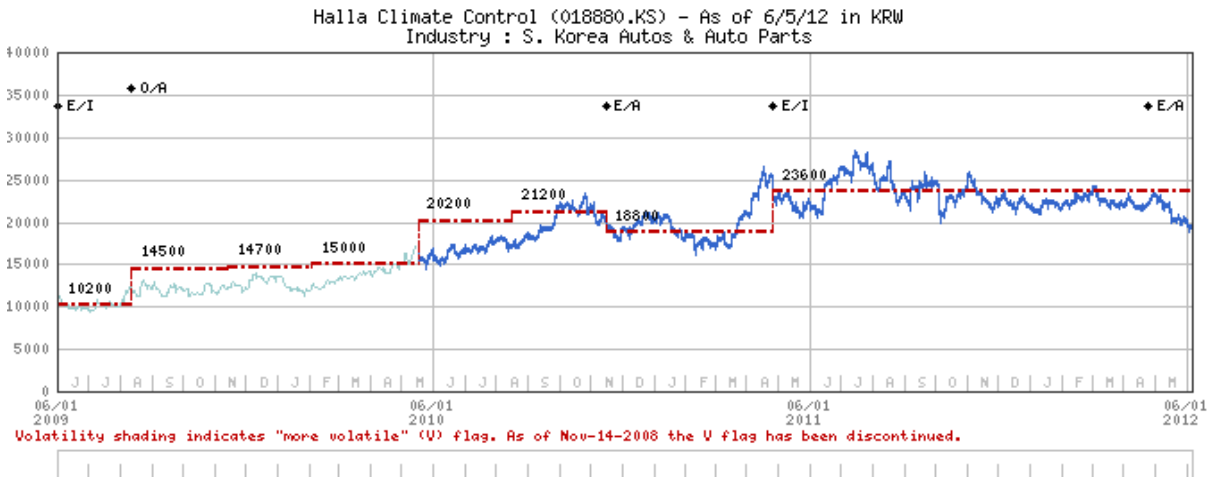
**Analyst Stock Ratings**

Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.  
 Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.  
 Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.  
 Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.  
 Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

**Analyst Industry Views**

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.  
 In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.  
 Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.  
 Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index.

**Stock Price, Price Target and Rating History (See Rating Definitions)**

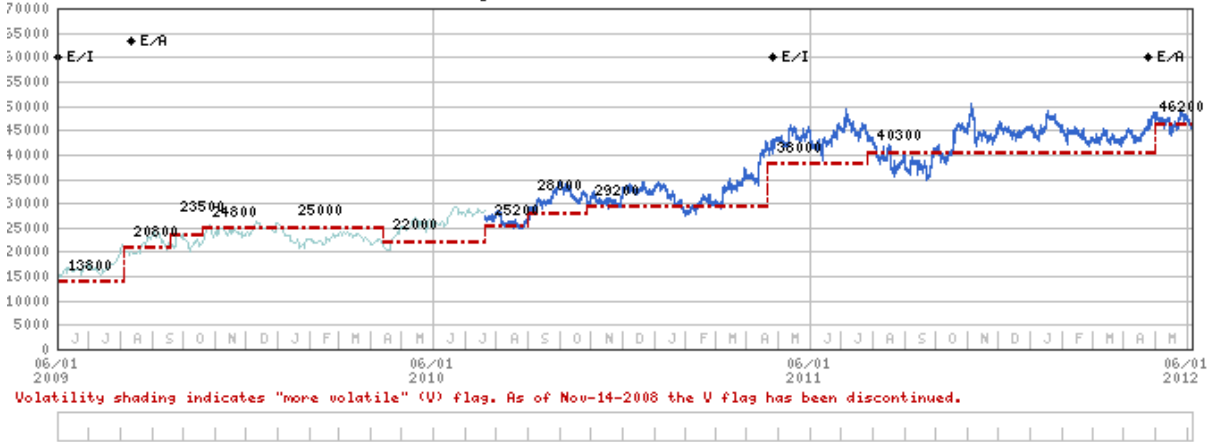


Stock Rating History: 6/1/09 : E/I; 8/12/09 : O/A; 11/15/10 : E/A; 4/27/11 : E/I; 4/25/12 : E/A  
 Price Target History: 5/29/09 : 10200; 8/12/09 : 14500; 11/13/09 : 14700; 2/2/10 : 15000; 5/17/10 : 20200; 8/16/10 : 21200; 11/15/10 : 18800; 4/27/11 : 23600

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)  
 Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —  
 Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Ratings/Industry View  
 Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) More Volatile (V) No Rating Available (NA)  
 Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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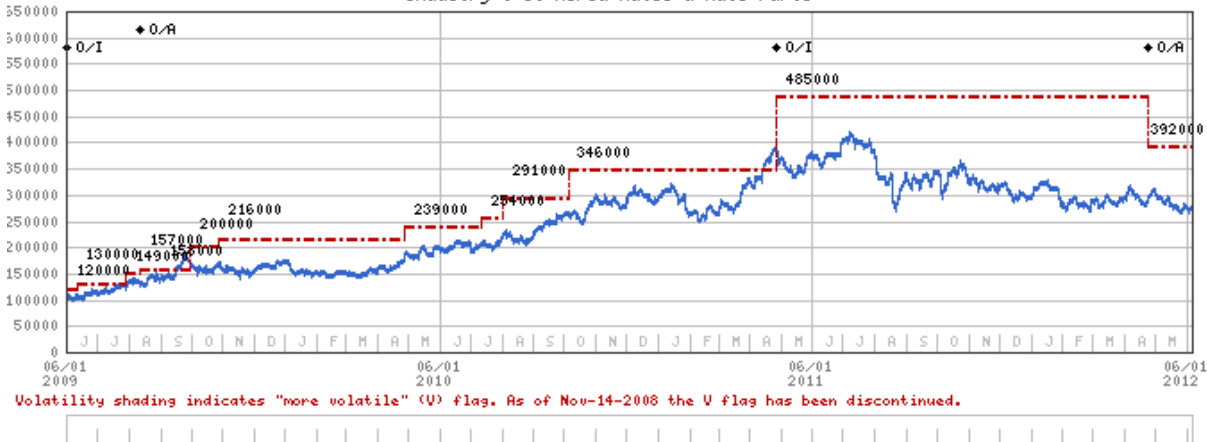
Hankook Tire (000240.KS) - As of 6/5/12 in KRW  
Industry : S. Korea Autos & Auto Parts



Stock Rating History: 6/1/09 : E/I; 8/12/09 : E/A; 4/27/11 : E/I; 4/25/12 : E/A  
Price Target History: 4/20/09 : 13800; 8/4/09 : 20800; 9/18/09 : 23500; 10/20/09 : 24800; 1/11/10 : 25000; 4/13/10 : 22000; 7/21/10 : 25200; 8/31/10 : 28000; 10/27/10 : 29200; 4/21/11 : 38000; 7/27/11 : 40300; 5/2/12 : 46200

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)  
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ■  
Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Ratings/Industry View  
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) More Volatile (V) No Rating Available (NA)  
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Hyundai MOBIS (012330.KS) - As of 6/5/12 in KRW  
Industry : S. Korea Autos & Auto Parts

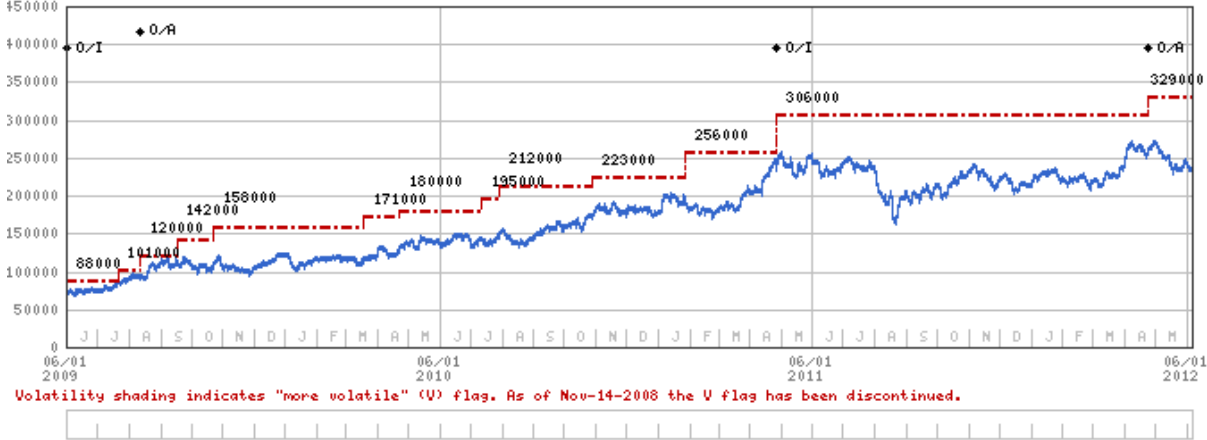


Stock Rating History: 6/1/09 : O/I; 8/12/09 : O/A; 4/27/11 : O/I; 4/25/12 : O/A  
Price Target History: 4/28/09 : 120000; 6/11/09 : 130000; 7/29/09 : 149000; 8/12/09 : 157000; 8/31/09 : 158000; 9/30/09 : 200000; 10/28/09 : 216000; 4/28/10 : 239000; 7/12/10 : 254000; 8/2/10 : 291000; 10/5/10 : 346000; 4/27/11 : 485000; 4/25/12 : 392000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)  
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ■  
Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Ratings/Industry View  
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) More Volatile (V) No Rating Available (NA)  
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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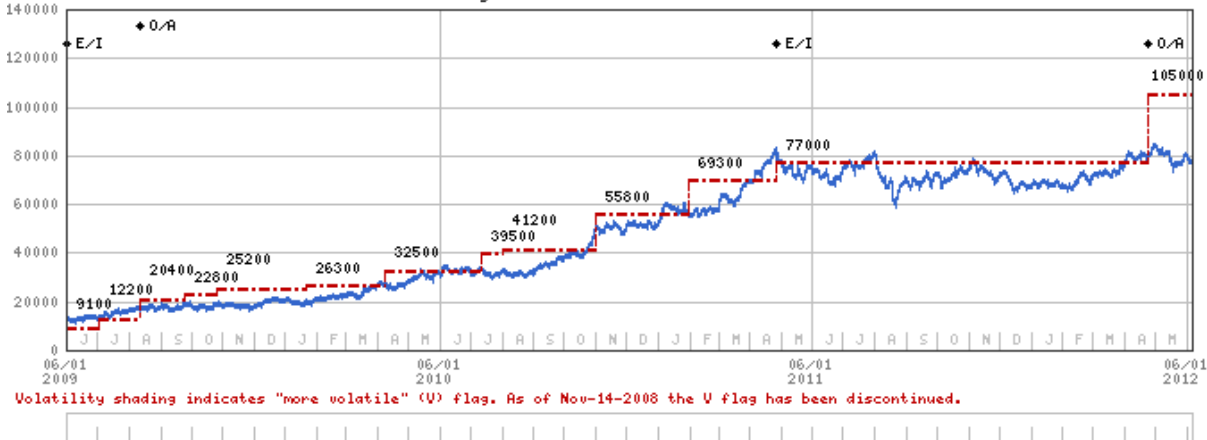
Hyundai Motor (005380.KS) - As of 6/5/12 in KRW  
Industry : S. Korea Autos & Auto Parts



Stock Rating History: 6/1/09 : 0/I; 8/12/09 : 0/A; 4/27/11 : 0/I; 4/25/12 : 0/A  
Price Target History: 4/7/09 : 80000; 6/1/09 : 88000; 7/21/09 : 101000; 8/12/09 : 120000; 9/17/09 : 142000; 10/23/09 : 158000; 3/18/10 : 171000; 4/23/10 : 180000; 7/12/10 : 195000; 7/30/10 : 212000; 10/29/10 : 223000; 1/28/11 : 256000; 4/27/11 : 306000; 4/25/12 : 329000

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Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —  
Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Ratings/Industry View  
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) More Volatile (V) No Rating Available (NA)  
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Kia Motors (000270.KS) - As of 6/5/12 in KRW  
Industry : S. Korea Autos & Auto Parts



Stock Rating History: 6/1/09 : E/I; 8/12/09 : 0/A; 4/27/11 : E/I; 4/25/12 : 0/A  
Price Target History: 4/21/09 : 9100; 7/3/09 : 12200; 8/12/09 : 20400; 9/25/09 : 22800; 10/26/09 : 25200; 1/22/10 : 26300; 4/9/10 : 32500; 7/12/10 : 39500; 8/2/10 : 41200; 11/1/10 : 55800; 1/31/11 : 69300; 4/27/11 : 77000; 4/25/12 : 105000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)  
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —  
Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Ratings/Industry View  
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) More Volatile (V) No Rating Available (NA)  
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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| <u>Ticker</u> | <u>Company Name</u>                  | <u>Close Price</u><br><u>(as of 06/04/2012)</u> | <u>Ticker</u> | <u>Company Name</u>           | <u>Close Price</u><br><u>(as of 06/04/2012)</u> |
|---------------|--------------------------------------|---|---------------|-------------------------------|---|
| 7259.T        | Aisin Seiki                          | JPY 2367.00                                     | LEA.N         | Lear Corporation              | USD 37.41                                       |
| ALV.N         | Autoliv                              | USD 54.93                                       | MGA.N         | Magna International Inc.      | USD 37.49                                       |
| BMWG.DE       | BMW                                  | EUR 56.85                                       | MAHM.BO       | Mahindra & Mahindra           | INR 649.10                                      |
| BWA.N         | BorgWarner Inc.                      | USD 64.78                                       | MRTI.BO       | Maruti Suzuki India Limited   | INR1068.00                                      |
| 5108.T        | Bridgestone                          | JPY1663.00                                      | 7261.T        | Mazda Motor                   | JPY 94.00                                       |
| 1114.HK       | Brilliance China Automotive          | HKD 7.06  | MICP.PA       | Michelin                      | EUR 46.28                                       |
| 2105.TW       | Cheng Shin Rubber                    | TWD 71.50                                       | 7211.T        | Mitsubishi Motors             | JPY 75.00                                       |
| CONG.DE       | Continental                          | EUR 62.89                                       | 5991.T        | NHK Spring                    | JPY 810.00                                      |
| 7262.T        | Daihatsu Motor                       | JPY1271.00                                      | 7201.T        | Nissan Motor                  | JPY 723.00                                      |
| DAIGn.DE      | Daimler                              | EUR 34.85                                       | 7240.T        | NOK                           | JPY 1547.00                                     |
| DAN.N         | Dana Holding Corp.                   | USD 12.19                                       | NRE1V.HE      | Nokian Tyres                  | EUR 27.67                                       |
| DLPH.N        | Delphi Automotive PLC                | USD 27.73                                       | PECI.MI       | Pirelli & C. SpA              | EUR 7.57  |
| 6902.T        | Denso                                | JPY2311.00                                      | PSHG_p.DE     | Porsche                       | EUR 39.39                                       |
| 0489.HK       | Dongfeng Motor Group                 | HKD 12.96                                       | PEUP.PA       | PSA Peugeot-Citroen           | EUR 7.85  |
| FIA.MI        | FIAT                                 | EUR 3.73  | RENA.PA       | Renault                       | EUR 32.89                                       |
| F.N           | Ford Motor Company                   | USD 10.04                                       | 6923.T        | Stanley Electric              | JPY 1070.00                                     |
| 7270.T        | Fuji Heavy Industries                | JPY 573.00                                      | 5110.T        | Sumitomo Rubber               | JPY 926.00                                      |
| GM.N          | General Motors Company               | USD 21.11                                       | 7269.T        | Suzuki Motor                  | JPY 1579.00                                     |
| GT.N          | Goodyear Tire & Rubber Company       | USD 9.44  | 7312.T        | Takata                        | JPY 1565.00                                     |
| 2333.HK       | Great Wall Motor Company Limited     | HKD 15.66                                       | TAMO.BO       | Tata Motors                   | INR 228.75                                      |
| 018880.KS     | Halla Climate Control                | KRW 19300.00                                    | TEN.N         | Tenneco Inc.                  | USD 24.79                                       |
| 000240.KS     | Hankook Tire                         | KRW 45500.00                                    | TSLA.O        | Tesla Motors Inc.             | USD 27.88                                       |
| HAR.N         | Harman International Industries Inc. | USD 38.29                                       | 7282.T        | Toyoda Gosei                  | JPY 1491.00                                     |
| 7267.T        | Honda Motor                          | JPY 2417.00                                     | 3116.T        | Toyota Boshoku                | JPY 818.00                                      |
| 2207.TW       | Hotai Motor                          | TWD 191.00                                      | 6201.T        | Toyota Industries             | JPY 2027.00                                     |
| 012330.KS     | Hyundai MOBIS                        | KRW 271000.00                                   | 7203.T        | Toyota Motor                  | JPY 2926.00                                     |
| 005380.KS     | Hyundai Motor                        | KRW 233500.00                                   | TRW.N         | TRW Automotive Holdings Corp. | USD 36.22                                       |
| 7202.T        | Isuzu Motors                         | JPY 388.00                                      | VLOF.PA       | Valeo S.A.                    | EUR 32.58                                       |
| JCI.N         | Johnson Controls, Inc.               | USD 28.60                                       | VOWG_p.DE     | Volkswagen                    | EUR 119.75                                      |
| 000270.KS     | Kia Motors                           | KRW 76900.00                                    | 5101.T        | Yokohama Rubber               | JPY 522.00                                      |
| 7276.T        | Koito Mfg.                           | JPY 999.00                                      | 2201.TW       | Yulon Motor                   | TWD 50.40                                       |
| 6301.T        | Komatsu                              | JPY 1802.00                                     |               |                               |   |